



PERSONNEL QUALIFICATION STANDARD

FOR

FLOATING DRYDOCKS

CHIEF OF NAVAL EDUCATION AND TRAINING

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PQS USER'S GUIDE

This guide will tell you about the Personnel Qualification Standards (PQS) Program, what it is, and how to use it.

WHAT IS PQS?

PQS is a part of your unit's overall training program. It is a method for qualifying officer and enlisted personnel in certain assigned duties. These duties may consist of a specific watchstation (Throttleman, Teletype Operator), maintaining equipment (AN/SPS-48A Radar Maintenance Tech, ACC Maintenance Tech) or performing as a team member (repair party or CIC team.)

I. WHAT IS IN PQS?

A. PQS consists of three parts:

1. The Standard Booklet contains questions which you need to be able to answer and performance items which you will need to be able to do in order to qualify on a watchstation. The standard was written by naval personnel asking the question of themselves, "What do I need to know to do the job properly?" Standards may include watchstations other than the one on which you are working. You should concentrate on those watchstations which you are assigned to complete, and not delay your qualification by spending time on other watchstations.

2. The Qualification Card is a checkoff list for the requirements you have accomplished. Many qual cards will include watchstations other than the one assigned for you to learn. You should ignore these other watchstation qualifications until they are assigned to you for completion. A qual card may be issued directly to you or may be retained at your work center by your work center supervisor. Check with your supervisor to determine where your card will be kept. It is very important, so don't lose it. If you lose it, you may have to requalify.

3. The Progress Chart shows which watchstations you have been assigned to complete and is also a record of your progress in each watchstation.

B. To use PQS you first need to know what is in the various parts.

1. The Standard Booklet is made up of the following sections. Some are self-explanatory.

INTRODUCTION
GLOSSARY (EXPLANATION) OF TERMS
CONTENTS
FUNDAMENTALS (THEORY)
SYSTEMS
WATCHSTATIONS
BIBLIOGRAPHY (LIST OF REFERENCES)
FEEDBACK (CHANGE REQUEST) FORM

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- (a) Fundamentals. This section contains the background knowledge that you need to know to do the job properly. Safety precautions that apply are listed here, too. Much of this necessary information can be learned in school. If you know the right answers, all that your supervisor needs to do is to ask you questions and sign you off in your qualification card. At the beginning of most fundamental (and system) areas is a list of reference books in which you can find the answers if you do not know them. The answers to many of these questions will be provided during divisional lectures.
- (b) Systems. In this section, the equipment you are studying is broken down into functional sections (systems), for example, the electrical system in your car. The components of your car's electrical system are scattered throughout your car, but taken all together they form the "electrical system." The same is true of the equipment you are studying in the Navy. The components may not all be located in one place, but they still form a system. In this part you may be asked to draw a diagram of the system or show your supervisor the physical location of its components.
- (c) Watchstation. This section contains the procedures you need to know to properly operate or maintain the equipment. There are two types of watchstations: operator and maintenance technician.

If your standards book does not include a list of reference books for the fundamentals or systems sections, ask your leading petty officer to list them for you. Other references generally will include your advancement-in-rate books, manufacturer's technical manuals, and broad technical reference documents such as Naval Ships' Technical Manual. Operating and technical manuals for specific systems such as NATOPS for aircraft systems, ship's information books, etc., are also useful.

2. Qualification Card. The qualification card is made up of the following parts:

FINAL QUALIFICATION PAGE
QUALIFICATION SUMMARY
FUNDAMENTALS AND SYSTEMS SUMMARY
WATCHSTATION REQUIREMENT SUMMARY

- (a) Final Qualification Page. This page is filled in when you have completed all watchstations, fundamentals, systems and other requirements in the card, indicating that you have attained final qualification on a particular equipment or watchstation. Many of you may never be required to complete this page unless all elements leading up to a very high watchstation are needed on the job.

- (b) Qualification Summary. This page lists all the watchstations within the card. As each watchstation is completed, the appropriate person should make the entries on this page.
- (c) Fundamentals and Systems Summary. This page is the checkoff list for the fundamental and system requirements of the watchstations in the card. The same sections may be used by more than one watchstation.
- (d) Watchstation Requirement Summary. This part is the checkoff list for the procedures you need to know to properly operate or maintain the equipment. As you complete an item in the watchstation requirements section in the standards booklet, it will be signed off in the qualification card. For example, when you have shown your supervisor that you can properly do watchstation item 301.15, he will sign off item 401.15 on your qual card. Don't be confused with the use of numbering between the standard and qual cards. Compare item 401.11 in your qual card with item 301.11 in the standard. You will see that the subject of items 301.11 and 401.11 is the same, but the qual card has a space for your supervisor's signature. For example, if you complete "loss of vacuum" in the standard, have "loss of vacuum" signed off in your qual card. Your PQS was designed this way so that you would have to carry only the pocket-sized qual card while you are qualifying at your watchstation. At the top of the first page of each watchstation, the fundamental and system requirements are listed for that watchstation. Some watchstations require that subordinate watchstations be completed first. These watchstations will be listed there, too. Some of the older PQS qual cards may not specify which fundamental and system items must be done. If you have one of these qual cards, have your leading petty officer write in the section numbers he wants you to complete for that watchstation.

III. HOW TO QUALIFY.

Your division officer or work center supervisor will issue you a standards booklet and qual card which include the watchstation at which you must qualify. Your supervisor will set time limits (goals) for completion of this watchstation and monitor your progress towards qualification. Open your qual card to the assigned watchstation. At the top of the page, you should find listed the required fundamental and system section for your watchstation. If not listed, ask your supervisor to list them for you. Do the safety fundamentals first, then the rest of the required fundamentals, systems and watchstations. Your supervisor may require you to complete these in a certain order. If not, the choice is up to you. Make sure you know the safety precautions connected with each system before going any further in that system.

If you do not know the answer to a question in the standards booklet, and the answer has not yet been covered in a lecture, look up the answer in one of the reference books listed at the beginning of that part of the booklet. If you can't find the answer in the reference books, ask your supervisor for assistance.

In the system and watchstation part of your standards booklet, you may find a format such as that in the example following. An explanation on how to use it is also given.

2204.2 SYSTEM COMPONENTS

Discuss the designated items for each component listed below.

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Show or describe the actual physical location of this component.

		A	B
		X	X
.21	Plumbing and deck drains		
.22	Portable pump overboard discharge connection(s)		X

For Item ".21," you must do both "A" and "B." For Item ".22," only "B" is required.

When you are sure of your answers, go to your qualifying petty officer. He will ask you the questions contained in the entire system and sign your qualification card if you have the right answers. For performance items, be ready to show him that you can do the task properly.

IV. THE SUPERVISOR

If you are a senior petty officer, you may be required to assign your junior people to complete specific watchstations in PQS. When you do this, always look through their qual cards to see what other items should be completed before they start on the required watchstation or its related fundamental and system parts. Many qual cards contain sections such as "Ship's Indoctrination" or "General Damage Control Requirements." If you are assigning more than one watchstation or section for completion, and if they are not to be worked at the same time, it will be up to you to specify which one should be completed first.

V. THE QUALIFYING PETTY OFFICER

You may be required to be a division qualifying petty officer. This will require an on-going effort on your part. As a qualifier, you will have to be familiar with all your work center's watchstations and equipment. You may have to list for your people those fundamental and system items that apply to a particular watchstation. You must make yourself available to check off your trainee's achievements.

Each qualifier should have a set of standard answers for the watchstations for which he is responsible so that all trainees get the same answer. If multiple signatures are required for a line item, you must ensure that a minimum of one working day elapses between signatures. If your trainees do not know the correct answer, tell them where in the book to find it. This

are missing from the standards booklet.

Much of what your men do as daily work can be signed off as PQS qualifications. For example, "3-M" PQS requires a man to (1) read the weekly schedule and determine his work assignment, (2) draw the appropriate MRC from the MRC deck, and (3) perform the maintenance action. That sounds like daily PMS checks, doesn't it? Much of PQS is merely documenting what you require a man to do in his normal work day.

Since the supervisor is responsible for training his men, he should be the one to update and maintain the progress chart. It is important that he be aware of who is and who is not progressing, as well as where counseling or individual instruction may be needed. A sample PQS progress chart can be found in the Handbook on Management and Implementation Procedures for Personnel Qualification Standards (NAVEDTRA 43100-1A).

BLOCK DIAGRAM - A drawing of a system using blocks for components to show the relationship of components. Inputs and outputs of the components may be indicated by labeled lines and/or arrowheads showing the flow path.

CASUALTY - An event or series of events in progress during which equipment damage and/or personnel injury has already occurred. The nature and speed of these events are such that proper and correct procedural steps will only serve to limit damage and/or personnel injury.

CLASSIFICATION AND/OR TYPE - To give the type of classification of various equipment, i.e., (a) check valve-swing, stop, etc; (b) valve-solenoid, manual, etc.

COMPONENT - The major units that make up a system when properly connected.

COMPONENT PART - The integral part of a component.

CONTROL SIGNAL - A signal used to activate control circuitry or indication, i.e., the signal from a pressure switch.

DEFINE - State meaning of

DEMONSTRATE - To show clearly

DESCRIBE - To represent or give an account of in words.

DISCUSS - Converse, demonstrate a Basic familiarity.

DRAW - To graphically define the functional location of all major components in a system with a block diagram.

EMERGENCY - An event or series of events in progress which will cause damage to equipment and/or personnel unless correct procedural steps are taken immediately.

ENSURE - To make certain.

EXPLAIN - Show the logical development of relationships, give a detailed account.

FAIL - 1. The loss of control signal or power to a component.
2. The breakage or breakdown of a component part.

FAIL POSITION - The inoperative status of a device because of the loss of its actuating electrical, electronic, pneumatic, or hydraulic control signal.

FUNCTION - To perform the normal or characteristic action of anything, special duty or performance required of a person or thing in the course of work.

IDENTIFY - To recognize, point out or prove to be as purported or asserted.

INTERLOCK - A feature/device in one system or component that affects the operation of another system or component. Generally a safety device but may be used to control the operating sequence of components.

LIST - Enumerate by category.

MONITOR - Assist normal Watchstanders in the conduct of their assigned duties.

MONITORING POINT - The physical location at which any indicating device displays the value of a parameter at some control station.

OPERATING CHARACTERISTICS - The combination of a parameter and its setpoints.

PARAMETERS - A variable such as temperature, pressure, flow rate, voltage, current, frequency, etc., which may be indicated, monitored, checked or sensed in any way during operation or testing.

PHYSICAL LOCATION - The actual location of a component within a system.

PROTECTIVE FEATURE - A feature of a component or component part designed to protect a component or system from damage.

PURPOSE - A statement in justification or explanation of.

REVIEW - To examine or study again.

SCHEMATIC DIAGRAM - A drawing of a system using only one line to show the tie-in of various components, i.e., the three conductors needed to transmit 3-phase power are represented by a single line.

SENSING POINT - The physical and/or functional point in a system at which a signal may be detected or monitored or may cause some automatic operation to result.

SETPPOINT - The numerical value of a parameter at which: (a) an alarm is actuated, (b) operator action is required, or (c) proper operation ceases and damage may occur.

SIMPLE SKETCH - A simplified drawing of a system.

STANDARD PRINT - A standard drawing, schematic, illustration, or blueprint produced in the applicable technical manual or other official technical publication.

STATE - To set forth or recount the particulars verbally.

SUPERVISE - Direct the activities of Watch teams/or individuals in the conduct of their assigned duties.

SYSTEM - The major functional segment of an installation/organization selected for individual attention.

SYSTEM INTERRELATION - Specific individual operations in one system affecting the operation of another system under normal conditions which are not fully described in emergency or casualty procedures or in the functional discussion of the system.

THEORY - A coherent group of facts, principles, or propositions used to explain or describe.

TRACE - To physically follow the layout of a system.

VERIFY - To ascertain the correctness of.

WATCHSTATION - Duties, assignments or responsibilities which an individual or group may be called upon to perform. Not necessarily a normally manned position with a "watchbill" assignment.

This PQS (Floating Drydocks) was developed by the following personnel
under the supervision of the PQS Development Group:

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NOTE: Letters and numbers in brackets [] in the Fundamental and System sections indicate the reference and location (section, chapter, appendix, etc.) where the answer may be found. Differences in some drydocks may require that some reference brackets be filled in on the finished copy by individual commands.

This section directs your attention to the terms, principles and laws of hydraulics. References used were:

- a. Principles of Naval Engineering (NAVEDTRA 10778)
- b. Fireman (NAVEDTRA 10520)
- c. Naval Ships' Technical Manual, Chapter 556 (old 9210)
- d. Fluid Power (NAVEDTRA 16193)

101.1 DRAWINGS, SYMBOLS AND PUBLICATIONS

- .11 Describe the following types of drawings: [a]
 - a. Cross section
 - b. Simple sketch
 - c. Schematic diagram
 - d. Block diagram
- .12 List the symbols used in Fluid Power, Chapter 4.
- .13 List the authoritative manuals or instructions used by your unit.

101.2 EQUIPMENT AND DEVICES

- .21 Explain the application and service use of the following: [d]
 - a. Reservoir
 - b. Pump
 - c. Tubing and piping
 - d. Relief valve
 - e. Sliding spool valve
- .22 Describe the various types of hydraulically operated equipment installed on board your drydock.
- .23 Identify the following: [b]
 - a. Sliding spool valve
 - b. Check valve
 - c. Relief valve
- .24 Describe the principles of operation of the following: [d]
 - a. Flow control valve
 - b. Gear pump
 - c. Differential area piston

101.3 TERMS AND DEFINITIONS

- 31 Define the following terms as applied to basic hydraulics: [d]
 - a. Viscosity
 - b. Viscosimeter
 - c. Cavitation
 - d. Input/output relations
 - e. Potential energy
 - f. Kinetic energy
 - g. Micron

101.4 PHYSICAL LAWS AND PRINCIPLES

- .41 Describe the basic principles involved in the following: [a]
- | | |
|---------------|---------------|
| a. Inertia | d. Velocity |
| b. Friction | e. Cavitation |
| c. Turbulence | |
- .42 Discuss the principles of hydraulic amplification. [d]

101.5 MATERIALS, TESTING AND INSPECTION [d]

- .51 Describe the types of hydraulic fluid used aboard your drydock.
.52 Describe the packing and gasket materials most commonly employed in a hydraulic system.
.53 Explain the reason for the cure date of an O-ring gasket.
.54 Explain the procedure used to inspect an O-ring gasket before installation.
.55 Explain the need for compatibility of O-ring material with hydraulic fluid.

101.6 CONSTRUCTION, CLASSIFICATIONS AND TYPES [c]

- .61 Describe the types of hydraulic pumps used aboard your drydock.
.62 List the applications of hydraulic cylinders aboard your drydock.
.63 List the types of hydraulic filters used aboard your drydock.
.64 List the types of material used for hydraulic filters.

- LAWS OF AUXILIARY BOILER FUNDAMENTALS: REFERENCES USED WERE:
- a. Fireman (NAVEDTRA 10520)
 - b. Boiler Technician 3 & 2 (NAVEDTRA 10535)
 - c. Boiler Technician 1 & C (NAVEDTRA 10536)
 - d. Naval Ships' Technical Manual, Chapter 221 (old 9510)

102.1 DRAWINGS

- .11 Discuss the information contained in a piping diagram. [b]

102.2 EQUIPMENT AND DEVICES

- .21 Explain the application and service use of the following: [b]

- | | |
|-------------------------|------------------------------|
| a. Auxiliary boiler | g. Refractory and insulation |
| b. Steam drum | h. Soot blowers |
| c. Water drum | i. Water gauges |
| d. Steam drum internals | j. Water level switch |
| e. Saddles and supports | k. Burners |
| f. Casing | |

- .22 Explain the protective functions of the following: [a]

- | | |
|------------------|----------------|
| a. Safety valves | b. Smoke stack |
|------------------|----------------|

102.3 TERMS AND DEFINITIONS

- .31 Define the following terms as applied to auxiliary boilers: [b; c]

- | | |
|------------------------|---------------|
| a. Steam generation | e. Firesides |
| b. Btu | f. Watersides |
| c. Natural circulation | g. Flue gas |
| d. Combustion | |

102.4 PHYSICAL LAWS AND PRINCIPLES [b]

- .41 Define the functional processes which occur in a boiler during the transfer of heat from the firesides to the watersides.
- .42 Explain the three basic methods of heat transfer.

102.5 MATERIALS, TESTING AND INSPECTION

- .51 Describe the following conditions found during inspection of boiler watersides: [c; d]

102.5 MATERIALS, TESTING AND INSPECTION (CONT'D)

- | | |
|--------------|----------------------|
| a. Scale | d. Sludge |
| b. Pitting | e. Oil contamination |
| c. Corrosion | |

.52 Describe the following conditions found during inspection of boiler firesides: [c; d]

- | | |
|-------------|-------------------|
| a. Warping | e. Scaling |
| b. Bulging | f. Pitting |
| c. Sagging | g. Acid corrosion |
| d. Cracking | |

102.6 CONSTRUCTION

.61 Describe the basic design features of the following: [c; d]

- a. Water tube boiler
- b. Fire tube boiler

- NAME OF ELECTRICIAN FOR EXAMINATION REFERENCES USED WERE:
- a. Basic Electricity (NAVEDTRA 10086)
 - b. Electrician's Mate 3 & 2 (NAVEDTRA 10546)
 - c. IC Electrician 3 & 2 (NAVEDTRA 10558)
 - d. Shipboard Electrical Systems (NAVEDTRA 10864)
 - e. AC/DC Generator

103.1 DRAWINGS

- .11 Discuss the information contained in the following areas of a blueprint: [d]
- a. Reference plans
 - b. Revision block
 - c. Title block
 - d. List of materials
 - e. General notes

103.2 EQUIPMENT AND DEVICES

- .21 Explain the application(s) of the following: [b]
- a. Megohmmeter
 - b. Voltage tester
 - c. Ammeter
 - d. Voltmeter
 - e. Wattmeter
 - f. Stroboscope
 - g. Tachometer
 - h. Phase-rotation meter
 - i. Clamp-on ammeter
 - j. Hydrometer

103.3 TERMS AND DEFINITIONS

- .31 Define the following terms as applied to electricity: [a; b; e]
- a. Matter
 - b. Voltage
 - c. Resistance
 - d. Current
 - e. Watts

103.4 PHYSICAL LAWS

- .41 Explain the application of Ohm's Law for determining voltage, current, resistance and power values. [b]

103.5 TESTING AND INSPECTION

- .51 Discuss the following steps of troubleshooting: [b; c]
- a. Symptom recognition
 - b. Symptom elaboration
 - c. Listing of probable faulty functions
 - d. Localizing the faulty function
 - e. Localizing trouble to the circuit
 - f. Failure analysis

104 DIESEL ENGINE FUNDAMENTALS

This section directs your attention to the terms, principles and laws of diesel engines. References used were:

- a. Engineman 3 & 2 (NAVEDTRA 10541)
- b. Naval Ships' Technical Manual, Chapter 233 (old 9412)

104.1 DRAWINGS AND PUBLICATIONS

- .11 Describe the following types of drawings: [b]
 - a. Schematic
 - b. Blueprint
- .12 List the authoritative manuals or instructions used by your division.

104.2 EQUIPMENT AND DEVICES

- .21 Explain the principles of operation and service use of the following: [a; b]
 - a. Blower
 - b. Scavenging pump
 - c. Fuel injector
 - d. Heat exchanger
 - e. Camshaft
 - f. Rocker arm assembly
 - g. Piston
 - h. Valves
- .22 Explain the applications and service use of the following: [a]
 - a. Torque wrench
 - b. Injector timing tool
 - c. Ring expander
 - d. Feeler gauge
 - e. Ring compressor
 - f. Heel bar
- .23 Explain the protective functions of the following: [a]
 - a. Gauge or thermometer
 - b. Speed-limiting governor
 - c. Overspeed governor
 - d. Pyrometer
 - e. Blower shutdown
 - f. Remote fuel shutdown

104.3 TERMS AND DEFINITIONS

- .31 Define the following terms as used in engineering: [a; b]
 - a. Intake
 - b. Exhaust
 - c. Compression
 - d. Combustion
 - e. Timing
 - f. Scavenging
 - g. Turbocharge
 - h. Hone
 - i. Reseating
 - j. Refacing
 - k. Viscosity
 - l. Saybolt
- .32 Explain the following: [a]
 - a. Compression event
 - b. Intake event
 - c. Exhaust event
 - d. Combustion event
 - e. Power event

- a. Direct reversible
- b. Diesel electric
- c. Direct drive

- d. Diesel hydraulic
- e. Emergency generation
- f. Main power plant

104.5 MATERIALS

.51 Describe the use and handling of the following materials: [c]

- | | |
|-----------------------|----------------------|
| a. Diesel fuel oil | e. Zinc |
| b. Lube oil | f. Boiler compound |
| c. Water pump grease | g. Sodium dichromate |
| d. All-purpose grease | |

104.6 TYPES

.61 Describe the basic types of diesel engines. [a]

This section directs your attention to the terms, principles and laws of MECHANICAL FUNDAMENTALS. References used were:

- a. Fireman (NAVEDTRA 10520)
- b. Engineman 3 & 2 (NAVEDTRA 10541)
- c. Tools and Their Uses (NAVEDTRA 10085)

105.1 DRAWINGS, SYMBOLS AND PUBLICATIONS [b]

- .11 List the authoritative manuals or instructions used in your department.
- .12 Identify the symbols for the following as used in mechanical blueprints:
 - a. Gate valve
 - b. Globe valve
 - c. Diaphragm valve
 - d. Relief valve
 - e. Angle valve
 - f. Swing-check valve
 - g. Duplex strainer
 - h. Simplex strainer
 - i. Butterfly valve
 - j. Ball-check valve
 - k. Reducing valve
 - l. Rotary pump
 - m. Centrifugal pump
 - n. Thermostatic valve
 - o. Thermometer
 - p. Remote-operated valve
 - q. Orifice plate
 - r. Pressure-regulating valve
 - s. Heat exchanger
 - t. Filter
 - u. Pressure gauge

105.2 EQUIPMENT AND DEVICES

- .21 Describe the applications of the following pumps used aboard your drydock: [b]
 - a. Centrifugal
 - b. Reciprocating
 - c. Rotary
 - d. Jet (eductor)
- .22 List the applications of the following: [b]
 - a. Lube oil purifier
 - b. Low-pressure air compressor
 - c. Medium-pressure air compressor
 - d. Fuel transfer pump
 - e. Lube oil transfer pump
 - f. Fire and flushing pump
 - g. Contaminated oil stripping pump
 - h. Main eductor
 - i. Coalescent filter/separator
- .23 Explain the protective functions of the following: [a]
 - a. Strainer
 - b. Filter
 - c. Relief valve
 - d. Pressure-regulating valve

- | | |
|---------------------------------|----------------------------------|
| e. Temperature-regulating valve | i. Pressure arm |
| f. Temperature alarm | j. Manometer |
| g. Thermometer | k. Air filter differential gauge |
| h. Gauge | |

105.3 TERMS AND DEFINITIONS [a; b]

- .31 Define the following engineering terms as applied to floating drydocks:
- | | |
|-----------------------------|----------------------|
| a. Low-pressure (LP) air | j. Flexible coupling |
| b. Medium-pressure (MP) air | k. Solid coupling |
| c. Torque | l. Light off/secure |
| d. Calibration | m. Start/stop |
| e. Alignment | n. Clearance |
| f. Heat transfer | o. Tolerance (+-) |
| g. Suction/discharge | p. Elongation |
| h. Lap fit | q. Axial thrust |
| i. Machine surface | |
- .32 Describe the general layout of major engineering machinery onboard the floating drydock.

105.4 PHYSICAL LAWS

- .41 Explain the relationship between area and applied pressure in a closed fluid system (Pascal's Law). [b]

105.5 MATERIALS, TESTING AND INSPECTION

- .51 Describe the use and handling of the following materials: [b; c]
- | |
|--|
| a. Teflon packing |
| b. Teflon gaskets |
| c. Oil paper |
| d. Braided flax packing |
| e. Preformed gasket (O-ring) |
| f. Sheet asbestos gasket |
| g. Wire-inserted asbestos packing |
| h. Asbestos cloth and resilient rubber packing |
| i. Spiral-wound metallic asbestos |
| j. Pressed paper sheet gasket |
- .52 Describe the most vital requirements of the following: [b]
- | | |
|-----------|---------------------|
| a. Piping | c. Gasket material |
| b. Valves | d. Packing material |

105.6 CONSTRUCTION, CLASSIFICATIONS AND TYPES [b]

- .61 Discuss the design features of the following types of air compressors used on floating drydocks:

105.6 CONSTRUCTION, CLASSIFICATIONS AND TYPES [b] (CONT'D)

- a. Low-pressure
 - b. Medium-pressure
 - c. High-pressure
- .62 List the major types of fuel systems on your drydock.
- .63 Discuss the methods used to ensure that available fuel is not contaminated.

This section directs your attention to the terms, principles and laws of air-conditioning and refrigeration. References used were:

- a. Engineman 3 & 2 (NAVEDTRA 10541)
- b. Naval Ships' Technical Manual, Chapters 510 (old 9380) and 516 (old 9590)

06.1 PUBLICATIONS

- .11 List the authoritative air-conditioning and refrigeration manuals or instructions used by your unit.

06.2 EQUIPMENT AND DEVICES

- .21 Explain the applications of the following: [a; b]
 - a. Thermostatic expansion valve (TXV)
 - b. Evaporator
 - c. Compressor
 - d. Condenser
 - e. Receiver
- .22 Explain the protective functions of the following: [a; b]
 - a. Dehydrator
 - b. Solenoid valves
 - c. Evaporator pressure-regulating (EPR) valve
 - d. Low-pressure cutout switch
 - e. High-pressure cutout switch
 - f. Relief valve
 - g. Water-regulating valve
 - h. Water failure cutout switch
 - i. Strainers
 - j. Lube oil failure switch

06.3 TERMS AND DEFINITIONS

- .31 Define the following terms as applied to air-conditioning and refrigeration: [a; b]
 - a. Btu
 - b. Specific heat
 - c. Latent heat of vaporization
 - d. Latent heat of fusion
 - e. Refrigeration effect
 - f. Refrigeration ton
 - g. Coefficient of performance

106.3 TERMS AND DEFINITIONS (CONT'D)

- h. Humidity
- i. Dewpoint
- j. Relative humidity
- k. Dry-bulb temperature
- l. Wet-bulb temperature
- m. Effective temperature

106.4 PHYSICAL LAWS [b]

- .41 Explain Charles' Law.
- .42 Explain Boyle's Law.

106.5 TESTING [a]

- .51 Describe the methods and equipments used to test for refrigerant leaks.

106.6 CONSTRUCTION, CLASSIFICATIONS AND TYPES [a; b]

- .61 List the three major types of compressors.
- .62 Describe the design features of the thermostatic expansion valve (TXV).
- .63 Describe the two general classes of ventilation equipment found aboard your drydock.

laws of drydocking. References used were:

- a. Naval Ships' Technical Manual, Chapter 997 (old 9070)
- b. Floating Drydock Training Manual (BUSHIPS/BUDOCKS June 1953)
- c. Floating Drydock Data Book
- d. Floating Drydock Damage Control Book
- e. Navy Regulations, 1973 (Art. 0445, 0446, 0752, 0753, 2030 and 2044)

107.1 TERMS AND DEFINITIONS []

.11 Define the following:

- | | |
|--------------------------------|--------------------|
| a. Docking position | l. Half-breadth |
| b. Block spacing | m. Dead rise |
| c. Cribbing | n. Keel length |
| d. Hauling blocks | o. Overall length |
| e. Keel blocks | p. Knuckle |
| f. Sub blocks | q. Displacement |
| g. Composite blocks | r. Draft |
| h. Buildup | s. Bevel |
| i. Soft cap | t. Type of shoring |
| j. Stern reference point (SRP) | u. Unit |
| k. Table of offsets | v. Deflection |

107.2 DOCUMENTS []

.21 Describe and explain information contained in the following:

- a. Individual ship docking plan
- b. Ship's weight distribution curves
- c. Drydock pumping plan
- d. Dock arrangement plan
- e. Dock setup sheet (working plan)
- f. Navy Regulations, 1973 (Art. 0445, 0446, 0752, 0753, 2030 and 2044)

107.3 TASKS []

.31 Describe how the following basic tasks are accomplished:

- a. Line handling while docking and undocking
- b. Positioning of unit in dock

107.4 MATERIALS, TESTING AND INSPECTION []

.41 Discuss the effects of the following:

- a. Excessive list and trim
- b. Excessive drydock deflection

This section directs your attention to the terms, principles and laws of drydock characteristics/arrangements. References used were

- a. Fireman (NAVEDTRA 10520)
- b. Ship's Damage Control Book
- c. Floating Drydock Training Manual (BUSHIPS/BUDOCKS June 1953)
- d. Standard Organization and Regulations of the U. S. Navy

108.1 WATCH, QUARTER AND STATION BILL [c; d]

- .11 State the location of the Watch, Quarter and Station Bill.
- .12 State the location of each station to which you are assigned IAW the Watch, Quarter and Station Bill.
- .13 Describe your duties as assigned by the Watch, Quarter and Station

108.2 COMPARTMENTATION AND WATERTIGHT INTEGRITY [b; c]

- .21 Describe the compartment numbering system used onboard your drydock
- .22 State the three major material conditions of readiness.
- .23 Define and explain the purpose of watertight integrity.
- .24 Describe how compartmentation and material conditions of readiness are used to ensure watertight integrity.
- .25 State the condition under which watertight integrity may be broken.
- .26 Describe the procedure to follow when temporarily breaking watertight integrity.
- .27 Describe the purpose and use of a compartment checkoff list.

108.3 FIRE AND FIREFIGHTING [a]

- .31 Discuss the proper procedures to report a fire or other casualty.
- .32 State the telephone number to be used to report a fire.
- .33 State the four classes of fires and how each is determined.
- .34 Describe the recommended extinguishing agents for each class of fire.
- .35 Discuss the use of fire boundaries in controlling a fire.

108.4 DRYDOCK DAMAGE TYPES [b; c]

- .41 Explain the difference between flooding and progressive flooding.
- .42 Explain the dangers of progressive flooding.
- .43 Define flooding boundaries.
- .44 Discuss the use of flooding boundaries in controlling flooding.

108.5 DRYDOCK DAMAGE REPAIR [b; c]

- .51 Describe the methods used to dewater a flooding compartment.
- .52 Discuss the use of plugs in repairing small holes.

This section directs your attention to the terms, principles and laws of stability and buoyancy. References used were:

- a. Floating Drydock Damage Control Book
- b. Ship's Data Book
- c. Floating Drydock Training Manual
- d. Naval Ships' Technical Manual, Chapters 079 V1 (old 9881) and 079 V2 (old 9880-II)

09.1 PHYSICS TERMS

.11 Define the following terms: [d]

- a. Volume
- b. Density
- c. Weight
- d. Center of gravity
- e. Force
- f. Moments
 - (1) Inclining
 - (2) Righting
 - (3) Vertical
 - (4) Trimming

09.2 STABILITY AND BUOYANCY TERMS [c; d]

.21 Define the following:

- a. Buoyancy
 - (1) Force of buoyancy
 - (2) Center of buoyancy
 - (3) Reserve buoyancy
 - (4) Metacenter
- b. Displacement
- c. Freeboard
- d. Draft
 - (1) Calculation of draft marks
 - (2) Navigational draft marks
 - (3) Mean (average) draft
 - (4) Limiting draft marks
 - (5) Internal draft indicators
- e. Stability
- f. Heel
- g. Roll
- h. List

109.2 STABILITY AND BUOYANCY TERMS [c; d] (CONT'D)

i. Trim

- (1) Up/down by bow
- (2) Up/down by stern

j. Pitch

109.3 WEIGHT EFFECTS [b]

.31 Discuss the effects and probable causes of the following:

- a. Weight additions
- b. Weight removals
- c. Weight shifts

.32 Discuss the methods of correcting for offcenter weight.

109.4 FLOODING EFFECTS [a]

- .41 List the most common causes of flooding.
- .42 Define solid flooding.
- .43 Define loose water.
- .44 Explain free surface effect.
- .45 Explain free communication effect.
- .46 Describe the changes in the liquid load diagrams during flooding conditions.

This section directs your attention to the authority or duties required of the Docking Officer. References used were:

- a. Naval Ships' Technical Manual, Chapters 245 (old 9440) and 997 (old 9070)
- b. Navy Regulations, 1973
- c. Ship's Data Book
- d. Standard Organization and Regulations of the U. S. Navy (OPNAVINST 3120.32)

110.1 AUTHORITY OR DUTIES

- .11 Discuss the following as applied to docking:
 - a. Docking Officer's authority to assume control [b]
 - b. Relationship in regard to vessel's Commanding Officer/Pilot and interrelationship of dock's Commanding Officer, Dockmaster and Ballast Control Operator [b]
 - c. Responsibility for safety of ships and craft at a naval station or shipyard [b-Art. 0752]
 - d. Duties of hull boards [d]
 - e. Ship's Drydocking Bill [d]
 - f. Propellers [a-245]
 - g. Type/Squadron Commander's drydock routines
 - h. Intervals for drydocking ships [a-997]
 - i. Hurricane and seismic earthquake considerations [a-997]
 - j. Mooring (anchor) spud moored to pier [c]
 - k. Proper use of tugs and line handlers [c]
 - l. Previous drydocking accidents and precautions necessary to avoid them [c]
 - m. Use of diver in docking and undocking [c]
- .12 Discuss the following in terms of drydocks which routinely drydock nuclear-powered ships: [c]
 - a. Operating requirements of the reactor plant during a drydock evolution, drydock support services required by the reactor plant, and safety precautions pertaining thereto
 - b. Radiological procedures and precautions employed during docking and when a nuclear-powered ship is in drydock

This section directs your attention to the terms, principles and laws of SAFETY PRECAUTIONS FUNDAMENTALS. References used were:

- a. Fireman (NAVEDTRA 10520)
- b. Boiler Technician 3 & 2 (NAVEDTRA 10535)
- c. Machinist's Mate 3 & 2 (NAVEDTRA 10524)
- d. Principles of Naval Engineering
- e. Naval Ships' Technical Manual, Chapter 079 V3 (old 9880-III)
- f. Navy Safety Precautions for Forces Afloat (OPNAVINST 5100.19)
- g. Basic Electricity (NAVEDTRA 10086)
- h. Engineman 3 & 2 (NAVEDTRA 10541)
- i. Standard Organization and Regulations of the U.S. Navy
- j. Environmental Protection Manual
- k. Naval Ships' Technical Manual, Chapter 330 (old 9640)
- l. Accident Prevention Manual (OPNAVINST 5101.2)

111.1 DRAWINGS, SYMBOLS AND PUBLICATIONS

- .11 Describe where safety precautions are posted for all machinery. [
- .12 Describe the routes to be taken when proceeding to sickbay and the decontamination station. []
- .13 Explain the use of the tag-out procedure (including color coding of tags). [i]

111.2 EQUIPMENT AND DEVICES

- .21 Discuss the proper placement and use of battle lanterns and emergency lights. [k]
- .22 Explain the use(s) and protective function(s) of the following:
[a; b; c; d; e]
 - a. Relief valves
 - b. Safety valves
 - c. Lagging
 - d. Reach rod
 - e. Quick-closing valves
 - f. Automatic cutout
 - g. Speed-limiting governor
 - h. Constant-pressure regulator
 - i. Machinery guards
- .23 Describe the following in terms of effect on or hazard to equipment:
[c]
 - a. Improper pump or gland packing
 - b. Misuse of valves
 - c. Packing gland too tight
 - d. Bowed shaft
 - e. Purification of lube oil
- .24 State the safety precautions involved when lighting off a boiler. [b]
- .25 State the general safety precautions involved when using high-speed rotating machinery. [c; h]

- .26 Discuss the purpose and required locations of flange safety shields. [c]
- .27 Discuss the importance of bolted deckplates, gratings, handrails and safety chains. [b; c; h; f]
- .28 Discuss the importance of good housekeeping practices aboard your drydock. []
- .29 Discuss the hazards of fuel oil or lube oil in bilges and waterways. [f]
- .210 Explain the dangers of skylarking aboard your drydock. [f]
- .211 Explain the special hazards involved and procedures to be followed when working on a pressurized or seawater system with single-valve protection. [c]
- .212 Explain the importance of tagging valves on a secured system before maintenance. [i]
- .213 Describe the safety precautions to be employed when handling and storing acids and alkalis. [f]
- .214 Explain the hazards to personnel entering or working in an unventilated space in which CO2 has been discharged. [f]
- .215 Discuss the precautions to be followed before entering a sealed void or compartment. [f]
- .216 State the hazards of discharging CO2 compressed gases toward the face or exposed body tissue. [a; f]
- .217 Discuss the precautions to be observed when handling and stowing CO2 extinguishers. [f]
- .218 Discuss the reason for not using a water extinguisher on a Class "C" fire. [f]
- .219 Discuss the reason for not using a solid stream of water on a Class "B" fire. [f]
- .220 Discuss the hazards to personnel in an area where steam is being released into the atmosphere through steam hoses or where steam-smothering systems are operating. [b]
- .221 Discuss the hazards to personnel when operating an electrical submersible pump in water. [f]
- .222 Discuss the possible results of an unattended open sounding tube on freshwater, feedwater and fuel tanks. []
- .223 Discuss the requirements of approved portable electrical lighting (type, construction and usage). [f]
- .224 Discuss the requirements for capping sound-powered phone outlets and S/R outlets when not in use. [f]

111.3 GENERAL SAFETY

- .31 Explain the procedures for removing a victim from an energized circuit. [g]
- .32 Explain the proper treatment for a victim of electrical shock. [g]
- .33 State the safety precautions and inspections applicable to portable electrical equipment. [g]
- .34 Explain the proper procedures to be followed prior to working on electrical machinery or equipment. [g]
- .35 State the safety precautions applicable to asbestos, fiberglass insulation materials, refrigerants, mercury and lead-base materials. [f]

111.3 GENERAL SAFETY (CONT'D)

- .36 State the required safety precautions associated with opening and working on seawater systems. [c]
- .37 Discuss your ship's smoking regulations.
- .38 Explain the oily waste discharge limitations imposed by the Environmental Protection Manual. [j]
- .39 Describe the procedures used, communications established and reports required in the event of an oil spill. [j]

111.4 MATERIALS

- .41 Explain the requirements for use of the following: [f]
 - a. Long-sleeved shirts
 - b. Hats
 - c. Goggles
 - d. Gloves
 - e. Steel-toed shoes
 - f. Hearing protective device
 - g. Respirators

111.5 ACCIDENTS AND THEIR PREVENTION

- .51 Demonstrate a knowledge of the various causes of accidents and their prevention by: [1]
 - a. Discussing the eight basic accident cause factors.
 - b. Defining accident, near accident, mishap and accident prevention.

- 201.1 Explain the function(s) of the COMMUNICATIONS SYSTEM as stated in:
- Ship's Data Book
 - Floating Drydock Training Manual
 - Manufacturers' Technical Manuals
- .11 Draw a block diagram of this system using appropriate symbols and showing all components listed in 201.2 for use throughout this discussion.

201.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- Explain the function(s) of this component in terms of what it does for the system.
- Show or describe the physical location of this component.
- Describe the source(s) of power to this component.
- List the position(s) and function(s) of each position of this component.
- List the interlocks associated with this component.

		A	B	C	D	E
.21	Administrative sound-powered telephone []	X	X			
.22	Engineer sound-powered telephone []	X	X			
.23	Dial-X telephone []	X	X	X		
.24	General announcing equipment (1MC) []	X	X	X		
.25	Docking control equipment (6MC) []	X	X	X		X
.26	Portable announcing equipment (10MC) []	X	X			
.27	Remote station controller switch []	X	X	X	X	
.28	1MC amplifier (AN/WIC) []	X	X	X		

201.3 COMPONENT PARTS

- There are no component parts to be discussed.

201.4 PRINCIPLES OF OPERATION

- There are no principles of operation to be discussed.

201.5 MAJOR PARAMETERS

- There are no major parameters to be discussed.

201.6 SYSTEM INTERRELATIONS

- Describe the effect(s) on this system due to the following:
 - Loss of electrical power
- There are no effects due to the operation of this system to be discussed.

201.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturers' Technical Manuals, OPNAVINST 5100.19 and OPNAVINST 3120.32.

202.1 Explain the function(s) of the TANK LEVEL INDICATOR (TLI)/DRAFT LEVEL INDICATOR (DLI) SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual
- c. Manufacturers' Technical Manuals

.11 Refer to a standard print of this system throughout this discussion.

202.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.
- E. List or describe the source(s) of control signal(s) for this component.
- F. Describe the physical location of the sensing point(s) for this component.
- G. Describe the "fail" position of this component on loss of power and the reason(s) it fails in this position.

		A	B	C	D	E	F	G
.21	Detector/transmitter []	X	X	X	X	X	X	X
.22	Bells []	X	X	X	X	X	X	X
.23	Indicators []	X		X	X	X	X	X
.24	Power supply unit []	X		X	X			X
.25	Purging valve []	X		X				
.26	Piping []	X		X				

202.3 COMPONENT PARTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component part in terms of what it does for the system component and how it carries out that function.
- B. Show or describe the physical location of this component part.
- C. Describe the source(s) of power to this component part.

		A	B	C
.31	Detector/transmitter: []			
	a. Float	X	X	X
	b. Transmitter coil	X	X	X

202.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of air from the reducer through the purge valve to the bell.

202.5 MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s).
- B. Show or describe the physical location at which the parameter is displayed for monitoring.
- C. Name the alarm and state the numerical value of the setpoint at which the alarm occurs.
- D. State the setpoints.

- .51 Level indication

A	B	C	D
X	X	X	X

202.6 SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:
 - 1. Loss of pneumatic and electrical power
- B. Describe the effect(s) on the following due to the operation of this system:
 - 1. List and trim on dock

202.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturers' Technical Manuals and OPNAVINST 5100.19.

203.1 Explain the function(s) of the ELECTRICAL SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual
- c. Manufacturers' Technical Manuals

.11 Refer to a standard print of this system throughout this discussion.

203.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Show or describe the physical location of this component.
- C. List the major load(s) supplied by this component.

		A	B	C
.21	AC/DC generator []	X	X	X
.22	Switchboard []	X	X	X
.23	AC distribution panel []	X	X	X
.24	DC distribution panel []	X	X	X

203.3 COMPONENT PARTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component part in terms of what it does for the system component and how it carries out that function.
- B. Describe the functional location of this component part with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component part.
- D. Describe the source(s) of power to this component part.
- E. List or describe the source(s) of control signal(s) for this component part.
- F. List the rating(s) of this component part.

		A	B	C	D	E	F
.31	AC/DC generator: []						
a.	Stator	X		X			
b.	Rotor	X		X			
c.	Brush rigging	X		X			
d.	Air cooler	X		X			
e.	Static exciter	X		X	X		
f.	Field-flashing circuit	X		X	X		
g.	Heater	X		X	X		
h.	Voltage regulator	X		X	X	X	

203.3 COMPONENT PARTS (CONT'D)

A B C D E F

.32 Switchboard: []

a. Automatic voltage regulator	X	X	X	X	
b. Manual voltage-adjusting rheostat	X	X	X		
c. Automatic voltage-adjusting rheostat	X	X	X	X	X
d. Governor motor control switch	X		X	X	
e. Kilowattmeter	X	X	X		
f. Ammeters	X	X	X		
g. Meter selector switch	X		X		
h. Voltmeters	X	X	X		
i. Synchrosopes	X	X	X		X
j. Synchronizing lights	X	X	X		X
k. Synchroscope switch	X	X	X		
l. Voltage regulator mode selector switch	X	X	X		
m. Reverse power relay	X	X	X	X	X
n. Power available lights	X	X	X	X	
o. Circuit breaker position lights	X	X	X	X	
p. Frequency meter	X	X	X	X	
q. Remote governor monitor switch	X		X		
r. Generator control transfer switch	X		X		
s. Ground test lights and switch	X		X	X	

.33 AC distribution panel: []

a. AC generator circuit breakers	X	X	X	X	X	X
b. Vital and semivital power circuit breakers	X	X	X	X	X	X
c. Power panels	X	X	X	X		
d. Shore power circuit breaker	X	X	X	X	X	X
e. Bus tie circuit breakers	X	X	X	X	X	X
f. Manual bus transfer	X		X	X		
g. Automatic bus transfer	X		X	X	X	
h. Lighting panel	X		X	X		
i. AC switchboard disconnect	X	X	X			
j. Welding generator circuit breaker	X		X		X	X

.34 DC distribution panel: []

a. Motor-generator	X		X	X	X	X
b. DC distribution switchboard	X	X	X	X		
c. Primary and secondary circuit breakers	X		X	X		X

203.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of power from the generator to the distribution panel.
- .42 The flow path of power from the shore to the distribution panel.

203.5 MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s).
- B. Show or describe the physical location at which the parameter is displayed for monitoring.
- C. State the setpoints.
- D. State the reason(s) for the setpoints in terms of the effect of operating above or below them.
- E. State the normal operating value.

		A	B	C	D	E
.51	Bus voltage	X	X	X	X	X
.52	Load current	X	X	X	X	X
.53	Generator frequency	X	X	X	X	X
.54	Grounds	X	X	X	X	X

203.6 SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:
 - 1. Loss of ship's diesel
 - 2. Loss of shore power
 - 3. Variations in shore power
- B. There are no effects due to the operation of this system to be discussed.

203.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturers' Technical Manuals, OPNAVINST 5100.19 and OPNAVINST 3120.32.

204.1 Explain the function(s) of the POTABLE WATER SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual
- c. Manufacturer's Technical Manual

.11 Refer to a standard print of this system throughout this discussion.

204.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.
- E. List the protective device(s) for this component.
- F. Discuss the protection provided by this component.
- G. Describe the physical location of the sensing point(s) for this component.
- H. Describe the "fail" position of this component on loss of power and the reason(s) it fails in this position.

	A	B	C	D	E	F	G	H
.21 Potable water storage tanks []	X		X					
.22 Manifold []	X	X	X					
.23 Potable water pumps []	X	X	X	X	X			
.24 Hypochlorinator []	X		X					
.25 Relief valve []	X	X	X					
.26 Valves []	X	X	X					
.27 Recirculating valve []	X	X	X					
.28 Air volume tank []	X	X	X					X
.29 Hot water heater []	X	X	X					
.210 Shore connections []	X		X					
.211 Salinity panel []	X	X	X	X		X		X
.212 Priming pump []	X	X	X	X	X			

204.3 COMPONENT PARTS

- A. There are no component parts to be discussed.

204.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of potable water from the shore connection to the manifold and to supplied components.

the tank.

204.5 MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s).
- B. Show or describe the physical location at which the parameter is displayed for monitoring.
- C. State the setpoints.
- D. State the reason(s) for the setpoints in terms of the effect of operating above or below them.
- E. State the normal operating value.

	A	B	C	D	E
.51 Pump discharge pressure	X	X	X	X	X
.52 Pump suction pressure	X	X	X	X	X
.53 Vacuum priming pump suction pressure	X	X	X	X	X
.54 Hot water temperature	X	X	X	X	X
.55 Tank level	X	X			X
.56 Salinity	X	X	X	X	X

204.6 SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:
 - 1. Variations in freshwater pump discharge pressure
- B. Describe the effect(s) on the following due to the operation of this system:
 - 1. Laundry equipment
 - 2. Galley equipment

204.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturer's Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.

205.1 Explain the function(s) of the SEAWATER SERVICE SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual
- c. Manufacturer's Technical Manual

.11 Refer to a standard print of this system throughout this discussion.

205.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.
- E. List the protective device(s) for this component.
- F. List the rating(s) of this component.

		A	B	C	D	E	F
.21	Pumps []	X	X	X	X	X	X
.22	Piping []	X	X	X			
.23	Valves []	X	X	X			
.24	Reducing valve []	X	X	X			X
.25	Strainers []	X	X	X			
.26	Pressure relief valve []	X	X	X		X	X
.27	Pressure gauge []	X	X	X			

205 .3 COMPONENT PARTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component part in terms of what it does for the system component and how it carries out that function.
- B. Describe the functional location of this component part with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component part.

		A	B	C
.31	Reducing valve:			
a.	Body	X	X	X
b.	Seat	X	X	X
c.	Disc	X	X	X
d.	Stem	X	X	X
e.	Adjusting spring	X	X	X

- f. Spring-adjusting screw
- g. Cap
- h. Diaphragm

X X X
X X X
X X X

205.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of seawater from the sea suction to the component supplied.

205.5 MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s).
- B. Show or describe the physical location at which the parameter is displayed for monitoring.
- C. Name the alarm and state the numerical value of the setpoint at which the alarm occurs.
- D. State the setpoints.
- E. State the reason(s) for the setpoints in terms of the effect of operating above or below them.
- F. State the normal operating value.

- .51 Seawater pressure

A	B	C	D	E	F
X	X	X	X	X	X

205.6 SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:
 - 1. Variations in firemain pressure
 - 2. Loss of electrical power
 - 3. Excessive demand of seawater service components
- B. Describe the effect(s) on the following due to the operation of this system:
 - 1. Air Compressor System
 - 2. Condensate coolers
 - 3. Refrigeration and Air-Conditioning System
 - 4. Flushing
 - 5. Services to unit in dock
 - 6. Diesel generator
 - 7. Ice cube machine

205.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturer's Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.

206.1 Explain the function(s) of the SANITARY SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual
- c. Manufacturer's Technical Manual

.11 Refer to a standard print of this system throughout this discussion

206.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.

		A	B	C	D
.21	Pumps []	X	X	X	X
.22	Piping []	X		X	
.23	Valves []	X		X	
.24	Chemical holding transfer tanks []	X	X	X	

206.3 COMPONENT PARTS

- A. There are no component parts to be discussed.

206.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of sewage from the collection point to the holding tank
- .42 The flow path of sewage from the collection point to the overboard discharge drains.

206.5 MAJOR PARAMETERS

- A. There are no major parameters to be discussed.

206.6 SYSTEM INTERRELATIONS

- A. There are no system interrelations to be discussed.

207 SHIP'S SERVICE STEAM SYSTEM

207

207.1 Explain the function(s) of the SHIP'S SERVICE STEAM SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual

.11 Refer to a standard print of this system throughout this discussion.

207.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. List or describe the source(s) of control signal(s) for this component.
- E. List the protective device(s) for this component.
- F. Discuss the protection provided by this component.

		A	B	C	D	E	F
.21	Valves []	X	X	X			
.22	Relief valves []	X	X	X			X
.23	Piping []	X		X		X	
.24	Thermal-regulating valve []	X	X	X	X		X
.25	Reducing station []	X		X			
.26	Shore/service connection []	X	X	X			
.27	Preheater and reheaters []	X		X			
.28	Connection heater []	X		X			
.29	Steam traps []	X		X			
.210	Low-pressure steam drain collecting tank []	X	X	X			
.211	Boiler []	X		X			

207.3 COMPONENT PARTS

A. There are no component parts to be discussed.

207.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of ship's service steam from the boiler to the supplied components and to the low-pressure drain tank.
- .42 The flow path of ship's service steam from the shore/service connection to the low-pressure drain tank.

- B. Name the alarm and state the numerical value of the setpoint at which the alarm occurs.
- C. State the reason(s) for the setpoints in terms of the effect of operating above or below them.
- D. State the normal operating value.

.51 Steam header pressure

A	B	C	D
X	X	X	X

207.6 SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:
 - 1. Loss of electrical power
 - 2. Loss of Fuel Oil System
 - 3. Loss of shore service steam
- B. Describe the effect(s) on the following due to the operation of this system:
 - 1. Services to unit in dock
 - 2. Laundry equipment
 - 3. Galley equipment
 - 4. Hot water heater

207.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturer's Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.

208.1 Explain the function(s) of the LOW-PRESSURE AIR SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual
- c. Manufacturer's Technical Manual

.11 Refer to a standard print of this system throughout this discussion.

208.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.
- E. List or describe the source(s) of control signal(s) for this component.
- F. List or describe the mode(s) of operation and/or control of this component.
- G. List the protective device(s) for this component.
- H. Discuss the protection provided by this component.
- I. List the rating(s) of this component.

		A	B	C	D	E	F	G	H	I
.21	Air compressor []	X		X	X	X	X	X		X
.22	Piping []	X		X						
.23	Accumulator []	X		X						X
.24	Reducer station []	X		X						X
.25	Relief valve []	X	X	X					X	
.26	Controllers []	X		X	X					

208.3 COMPONENT PARTS

- A. There are no component parts to be discussed.

208.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of low-pressure air from the air compressor to the supplied components.

208.5 MAJOR PARAMETERS

- A. Show or describe the physical location at which the parameter is displayed for monitoring.
- B. Name the alarm and state the numerical value of the setpoint at which the alarm occurs.

- C. State the setpoints.
 D. State the reason(s) for the setpoints in terms of the effect of operating above or below them.

	A	B	C	D
.51 Low-pressure air pressure	X			X
.52 Interstage pressure	X	X	X	X
.53 Cooling water temperature/pressure	X			X
.54 Unloader pressure	X	X	X	X
.55 Discharge temperature in all stages	X	X	X	X
.56 Lube oil pressure	X	X	X	X

208.6 SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:
1. Loss of cooling water pressure
 2. Loss of electrical power
 3. Loss of Fuel Oil System
- B. Describe the effect(s) on the following due to the operation of this system:
1. Tank Level Indicator System
 2. Laundry equipment

208.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturer's Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.

209.1 Explain the function(s) of the AIR-CONDITIONING AND REFRIGERATION SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual
- c. Manufacturer's Technical Manual

.11 Refer to a standard print of this system throughout this discussion.

209.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.
- E. Discuss the protection provided by this component.
- F. Describe the physical location of the sensing point(s) for this component.

		A	B	C	D	E	F
.21	Gaugeboard []	X	X	X			
.22	Condenser []	X	X	X			
.23	Compressor []	X	X	X			
.24	Motor and fan []	X	X	X	X		
.25	Thermostat []	X	X	X	X		
.26	Expansion valve []	X	X	X		X	X
.27	Capillary tubes []	X	X	X			X
.28	Evaporator []	X	X	X		X	
.29	Evaporator pressure regulator (EPR) valve []	X	X	X			
.210	Receiver []	X	X	X			
.211	Dehydrators []	X	X	X			

209.3 COMPONENT PARTS

- A. There are no component parts to be discussed.

209.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of refrigerant from the compressor discharge to the receiver.
- .42 The flow path of refrigerant from the receiver to the suction side of the compressor.

209.6 SYSTEM INTERRELATIONS

A. Describe the effect(s) on this system due to the following:

1. Loss of cooling water

B. There are no effects due to the operation of this system to be discussed.

209.7 SAFETY PRECAUTIONS

A. Discuss the safety precautions applicable to each system component as specified in the Manufacturer's Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.

210.1 Explain the function(s) of the STERN GATE HYDRAULICS SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual
- c. Manufacturer's Technical Manual

.11 Refer to a standard print of this system throughout this discussion.

210.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Show or describe the physical location of this component.
- C. Describe the source(s) of power to this component.
- D. List or describe the mode(s) of operation and/or control of this component.
- E. Discuss the protection provided by this component.

		A	B	C	D	E
.21	Pump []	X	X	X		
.22	Valves []	X	X			
.23	Piping []	X	X			
.24	Storage tank []	X	X			
.25	Ram []	X	X			
.26	Relief valve []	X	X		X	
.27	Control valve []	X	X		X	X
.28	Gauges []	X	X			

210.3 COMPONENT PARTS

A. There are no component parts to be discussed.

210.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of hydraulic oil from the storage tank to the ram and back to the storage tank.

210.5 MAJOR PARAMETERS

- A. Show or describe the physical location at which the parameter is displayed for monitoring.
- B. State the normal operating value.

.51 Hydraulic pressure

A	B
X	X

210.6 SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:
 - 1. Loss of electrical power
- B. There are no effects due to the operation of this system to be discussed.

210.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturer's Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.
- B. Discuss the following in terms of safety precaution(s) unique to this system:
 - 1. Operation of stern gate with improper head of river

211 DIESEL SYSTEM

211.1 Explain the function(s) of the DIESEL SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual
- c. Manufacturer's Technical Manual
- d. Fundamentals of Diesel Engines (NAVEDTRA 16178)
- e. Naval Ships' Technical Manual, Chapter 233 (old 9412)

.11 Refer to a standard print of this system throughout this discussion.

211.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Show or describe the physical location of this component.
- C. Describe the source(s) of power to this component.
- D. Discuss the protection provided by this component.

	A	B	C	D
.21 Engine block []	X	X		
.22 Cylinder liners []	X	X		
.23 Crankshaft []	X	X		
.24 Vertical drive assembly []	X	X		
.25 Connecting rod assembly []	X	X		
.26 Camshaft []	X	X		
.27 Blower []	X	X	X	
.28 Fuel delivery assembly []	X	X	X	
.29 Governor and control assembly []	X	X	X	X
.210 Lubricating oil delivery assembly []	X	X		
.211 Pumps []	X			
.212 Freshwater cooler []	X	X		
.213 Lubricating oil cooler []	X	X		
.214 Starting air assembly []	X	X		
.215 Barring device and interlock []	X	X	X	
.216 Flywheel []	X	X		
.217 Expansion tank []	X	X		X
.218 Turbocharger []	X	X	X	
.219 Cylinder heads []	X	X		

211.3 COMPONENT PARTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component part in terms of what it does for the system component and how it carries out that function.
- B. Show or describe the physical location of this component part.
- C. Describe the source(s) of power to this component part.
- D. Discuss the protection provided by this component part.

211.3 COMPONENT PARTS (CONT'D)

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
.31 Engine block:				
a. Blower drive component	X	X		
b. Upper crankcase compartment	X	X		
c. Lower crankcase compartment	X	X		
d. Air receiver compartment	X	X		
e. Injection nozzle compartment	X	X		
f. Exhaust manifold and cooling water compartment	X	X		
g. Vertical drive compartment	X	X		
.32 Cylinder liners:				
a. Seals	X	X		
b. Lock rings	X	X		
.33 Crankshaft:				
a. Main bearings	X	X		
b. Thrust bearings	X	X		
c. Torsional damper	X	X		
d. Timing chain sprocket	X	X		
e. Coupling	X	X		
.34 Vertical drive assembly:				
a. Bevel gears	X	X		
b. Pinion shaft	X	X		
c. Coupling	X	X		
d. Thrust bearings	X	X		
e. Oil headers	X	X		
.35 Connecting rod assembly:				
a. Piston	X	X		
b. Piston pin	X	X		
c. Connecting rod	X	X		
d. Connecting rod bearing	X	X		
e. Compression rings	X	X		
f. Oil scraper rings	X	X		
g. Oil drain rings	X	X		
h. Piston insert	X	X		
i. Connecting rod cap	X	X		
j. Bushings	X	X		
.36 Camshaft:				
a. Bearings	X	X		
b. Thrust bearings	X	X		
c. Coupling	X	X		
d. Sprocket	X	X		

211.3 COMPONENT PARTS (CONT'D)

	A	B	C
e. Overspeed governor	X	X	X
f. Thrust ring	X	X	
g. Thrust collar	X	X	
.37 Blower:			
a. Blower housing	X	X	
b. Bearings	X	X	
c. Impellers	X	X	
d. Drive gear	X	X	
e. Timing gear	X	X	
.38 Fuel delivery assembly:			
a. Supply tank	X	X	
b. Relief valve	X	X	
c. Duplex filter	X	X	
d. Engine header	X	X	
e. Drain header	X	X	
f. Return header	X	X	
g. Control rack	X	X	
h. Injection pump	X	X	X
i. Injection nozzle	X	X	
.39 Governor and control assembly:			
a. Governor link lever and control shaft	X	X	
b. Reset lever and shaft	X	X	
c. Control quadrant lever and shaft	X	X	
d. Fuel control arm	X	X	
e. Governor stop rod	X	X	
f. Emergency stop button	X	X	
g. Flexible drive	X	X	
.310 Lubricating oil delivery assembly:			
a. Filter	X	X	
b. Strainer	X	X	
c. Relief valves	X	X	
.311 Pumps:			
a. Fuel oil pump	X	X	X
b. Generator oil pump	X	X	X
c. Lubricating oil pump	X	X	X
d. Seawater pump	X	X	X
e. Freshwater pump	X	X	X
.312 Freshwater cooler:			
a. Tube bundle	X	X	

211.3 COMPONENT PARTS (CONT'D)

	A	B	C	D
b. Bonnet	X	X		
c. Shell	X	X		
d. Transverse baffles	X	X		

.313 Starting air assembly:

a. Flask	X	X		
b. Reducer	X	X		
c. Relief valve	X	X		
d. Air manifold	X	X		
e. Piping	X	X		
f. Check valves	X	X		

.314 Barring device and interlock:

a. Swing bracket	X	X		
b. Drive worm	X	X		
c. Interlock cable	X	X		

.315 Turbocharger:

a. Turbine	X	X	X	
b. Compressor	X	X		
c. Bearings	X	X		
d. Casing	X	X		
e. Seals	X	X		

.316 Cylinder heads:

a. Valves	X	X		
b. Valve spring	X	X		

211.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of freshwater from pump discharge to pump suction.
- .42 The flow path of seawater from sea suction to overboard discharge.
- .43 The flow path of lubricating oil from pump discharge to pump suction.
- .44 The flow path of fuel from tank suction to tank return.

211.5 MAJOR PARAMETERS

- A. Show or describe the physical location at which the parameter is displayed for monitoring.
- B. Name the alarm and state the numerical value of the setpoint at which the alarm occurs.
- C. State the normal operating value.

211.5 MAJOR PARAMETERS (CONT'D)

	A	B	C
.51 Lubricating oil temperature	X		X
.52 Lubricating oil pressure	X		X
.53 Freshwater temperature/pressure	X		X
.54 Seawater temperature	X		X
.55 Cylinder temperature	X		X
.56 Low lubricating oil pressure		X	
.57 High water temperature		X	
.58 Cylinder pressure	X		X

211.6 SYSTEM INTERRELATIONS

A. Describe the effect(s) on this system due to the following

1. Variations in electrical load

B. Describe the effect(s) on the following due to the operation of this system:

1. Electrical Distribution System

211.7 SAFETY PRECAUTIONS

A. Discuss the safety precautions applicable to each system component as specified in the Manufacturer's Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.

212.1 Explain the function(s) of the AUXILIARY BOILER SYSTEM as stated in:

- a. Manufacturer's Technical Manual
- b. Naval Ships' Technical Manual, Chapter 221 (old 9510)

.11 Refer to a standard print of this system throughout this discussion.

212.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.
- E. List or describe the mode(s) of operation and/or control of this component.
- F. Discuss the protection provided by this component.
- G. Describe the physical location of the sensing point(s) for this component.

	A	B	C	D	E	F	G
.21 Watersides []	X	X	X				
.22 Firesides []	X	X	X				
.23 Combustion air fan []	X	X	X	X			
.24 Safety valves []	X	X	X			X	X
.25 Boiler combustion controls []	X	X	X	X	X	X	
.26 Soot blower []	X	X	X				
.27 Water gauge glass []	X	X	X			X	
.28 Burner []	X	X	X				
.29 Safety hand-easing gear []	X	X	X				
.210 Peep door []	X	X	X				
.211 Stack []	X	X	X				
.212 Solenoid valves []	X	X	X	X			
.213 Motor (forced draft blower) []	X		X				
.214 Motor (feedwater pump) []	X		X				
.215 Motor (fuel oil pump) []	X		X				
.216 Controller (forced draft blower) []	X		X				
.217 Controller (feedwater pump) []	X		X				
.218 Controller (fuel oil pump) []	X		X				
.219 Ignitor []	X	X	X	X			
.220 Selector switch (firing rate) []	X		X		X		
.221 Selector switch (automatic/manual) []	X		X		X		
.222 Limit switch (low water level) []	X		X			X	
.223 Limit switch (high steam pressure) []	X		X			X	
.224 Limit switch (flareout) []	X		X			X	
.225 Alarm bell []	X		X	X			
.226 Smoke unit []	X		X				

212.3 COMPONENT PARTS

- A. There are no component parts to be discussed.

212.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of feedwater from the feed tank to the steam drum.
.42 The flow path of combustion gases from the point of combustion to the top of the stack.

212.5 MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s)
B. Show or describe the physical location at which the parameter is displayed for monitoring.
C. Name the alarm and state the numerical value of the setpoint at which the alarm occurs.
D. State the setpoints.
E. State the reason(s) for the setpoints in terms of the effect of operating above or below them.

- .51 Steam drum pressure

A	B	C	D	E
X	X	X	X	X

212.6 SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:
1. Variations in fuel oil pressure
- B. Describe the effect(s) on the following due to the operation of this system:
1. Distilling Plant System
 2. Laundry

212.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturer's Technical Manual, Naval Ships' Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.

213.1 Explain the function(s) of the AUXILIARY BOILER FUEL SYSTEM as stated in:

- a. Ship's Data Book
- b. Manufacturer's Technical Manual

.11 Refer to a standard print of this system throughout this discussion.

213.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.
- E. Discuss the protection provided by this component.
- F. List the rating(s) of this component.

		A	B	C	D	E	F
.21	Fuel oil service tank valves []	X	X	X			
.22	Fuel oil filter []	X	X	X		X	
.23	Fuel oil control valve []	X	X	X	X		
.24	Back pressure relief valve []	X	X	X		X	
.25	Fuel oil solenoid valves []	X	X	X	X	X	
.26	Atomizer assembly []	X	X	X			
.27	Fuel oil pump []	X	X	X	X		X

213.3 COMPONENT PARTS

- A. There are no component parts to be discussed.

213.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of fuel oil from the fuel oil service tank to the atomizer.
- .42 The flow path of fuel oil from the back pressure relief valve to the fuel oil service tank.

213.5 MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s).
- B. Show or describe the physical location at which the parameter is displayed for monitoring.

	A	B
.51 Fuel oil supply pressure	X	X
.52 Fuel oil return pressure	X	X

213.6 SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:
 - 1. Variations in firing rate
- B. Describe the effect(s) on the following due to the operation of this system:
 - 1. Diesel Engine Fuel Service System
 - 2. Auxiliary Boiler System

213.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturer's Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.

214 AUXILIARY BOILER FEEDWATER SYSTEM

214

214.1 Explain the function(s) of the AUXILIARY BOILER FEEDWATER SYSTEM as stated in:

- a. Ship's Data Book
- b. Naval Ships' Technical Manual, Chapter 221 (old 9510)
- c. Manufacturer's Technical Manual

.11 Refer to a standard print of this system throughout this discussion.

214.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.
- E. List or describe the source(s) of control signal(s) for this component.
- F. List or describe the mode(s) of operation and/or control of this component.
- G. Discuss the protection provided by this component.
- H. List the rating(s) of this component.

	A	B	C	D	E	F	G	H
.21 Reserve feed tank []	X	X	X					X
.22 Feed and drain tank []	X	X	X					X
.23 Salinity cells []	X	X	X	X			X	
.24 Float valve []	X	X	X		X			
.25 Valves []	X	X	X					
.26 Strainer []	X	X	X					
.27 Feed pump []	X	X	X	X				X
.28 Feedwater-regulating valve []	X	X	X		X	X		
.29 Chemical injection tank []	X	X	X					
.210 Feedwater thermostat []	X	X	X		X		X	

214.3 COMPONENT PARTS

A. There are no component parts to be discussed.

214.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of feedwater from the reserve tank to the boiler steam drum.
- .42 The flow path of feedwater from the feed pump back to the drain tank.

214.5 MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s)
- B. Show or describe the physical location at which the parameter is displayed for monitoring.
- C. State the setpoints.
- D. State the reason(s) for the setpoints in terms of the effect of operating above or below them.

	A	B	C	D
.51 Feed pump suction pressure	X	X		
.52 Feed pump discharge pressure	X	X		
.53 Remote drain tank level	X	X		
.54 Drain tank level	X	X	X	X

214.6 SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:
 - 1. Variations in boiler output rate
- B. Describe the effect(s) on the following due to the operation of this system:
 - 1. Auxiliary Boiler System

214.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Naval Ships' Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.

215 AUXILIARY BOILER BLOWDOWN SYSTEM

215

215.1 Explain the function(s) of the AUXILIARY BOILER BLOWDOWN SYSTEM as stated in:

- a. Ship's Data Book
- b. Naval Ships' Technical Manual, Chapter 221 (old 9510)

.11 Refer to a standard print of this system throughout this discussion.

215.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Discuss the protection provided by this component.

		A	B	C	D
.21	Surface blow valve []	X	X	X	X
.22	Bottom blow valve []	X	X	X	X
.23	Bilge rundown/overboard valve []	X	X	X	X
.24	Overboard guarding valve []	X	X	X	X
.25	Overboard discharge valve []	X	X	X	X
.26	Blowdown piping []	X	X	X	

215.3 COMPONENT PARTS

- A. There are no component parts to be discussed.

215.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of boiler water from the steam drum to the overboard discharge valve.

215.5 MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s).
- B. Show or describe the physical location at which the parameter is displayed for monitoring.

		A	B
.51	High water level	X	X
.52	Low water level	X	X

215.6 SYSTEM INTERRELATIONS

- A. There are no effects on this system to be discussed.
- B. Describe the effect(s) on the following due to the operation of this system:
 - 1. Auxiliary Boiler System
 - 2. Auxiliary Boiler Feedwater System

215.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturer's Technical Manual, Naval Ships' Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.
- B. Discuss the following in terms of safety precautions unique to this system:
 - 1. Bottom blow with fires lit
 - 2. Installation of locking devices on blowdown valves

216.1

Explain the function(s) of the AUXILIARY BOILER CHEMICAL INJECTION SYSTEM as stated in:

- a. Floating Drydock Data Book
- .11 Refer to a standard print of this system throughout this discussion.

216.2

SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.

		A	B	C
.21	Piping []	X	X	X
.22	Mixing tank []	X	X	X
.23	Mixing tank fill and cutout valves []	X	X	X
.24	Vent valve []	X	X	X
.25	Drain valve to bilges []	X	X	X
.26	Mixing tank discharge valve []	X	X	X
.27	Boiler cutout valve []	X	X	X

216.3

COMPONENT PARTS

- A. There are no component parts to be discussed.

216.4

PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of chemicals from the mixing tank to the boiler.
- .42 The flow path of chemicals from the mixing tank to the bilges.

216.5

MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s).
- B. Show or describe the physical location at which the parameter is displayed for monitoring.

	A	B
.51 Chemical injection pressure	X	X

216.6

SYSTEM INTERRELATIONS

- A. There are no effects on this system to be discussed.

216.6 SYSTEM INTERRELATIONS (CONT'D)

B. Describe the effect(s) on the following due to the operation of this system:

1. Auxiliary Boiler System

216.7 SAFETY PRECAUTIONS

A. Discuss the safety precautions applicable to each system component as specified in the Rate Training Manuals, OPNAV 5100.19 and OPNAVINST 3120.32.

B. Discuss the following in terms of safety precaution(s) unique to this system:

1. Handling of caustic material

217.1 Explain the function(s) of the LUBE OIL/FUEL OIL PURIFICATION/TRANSFER SYSTEM as stated in:

- a. Ship's Data Book
- b. Manufacturers' Technical Manuals

.11 Refer to a standard print of this system throughout this discussion.

217.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.
- E. List the protective device(s) for this component.
- F. Discuss the protection provided by this component.
- G. Describe the physical location of the sensing point(s) for this component.

	A	B	C	D	E	F	G
.21 Engine sumps []	X	X	X				
.22 Lube oil/fuel oil suction manifold []	X	X	X				
.23 Lube oil/fuel oil duplex strainer []	X	X	X		X	X	
.24 Lube oil heater []	X	X	X	X			X
.25 Lube oil/fuel oil purifier [b]	X	X	X	X	X	X	
.26 Lube oil/fuel oil discharge manifold []	X	X	X				
.27 Pressure gauges []	X	X	X				
.28 Thermometers []	X	X	X				
.29 Stop valves []	X	X	X				
.210 Storage tanks []	X	X	X				
.211 Suction manifold []	X	X	X				
.212 Lube oil/fuel oil transfer pump [b]	X	X	X	X	X		X
.213 Strainer []	X	X	X				
.214 Discharge manifold []	X	X	X				
.215 Day tanks []	X	X	X				

217.3 COMPONENT PARTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component part in terms of what it does for the system component and how it carries out that function.
- B. Describe the functional location of this component part with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component part.

217.3 COMPONENT PARTS (CONT'D)

D. Describe the source(s) of power to this component part.

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
.31 Lube oil/fuel oil purifier: [b]				
a. Drive assembly	X	X	X	
b. Bowl assembly	X	X	X	
c. Suction pump	X	X	X	
d. Discharge pump	X	X	X	
.32 Lube oil/fuel oil transfer pump: [b]				
a. Housing	X	X	X	
b. End plate	X	X	X	
c. Drive screw	X	X	X	X
d. Idler screw	X	X	X	X
e. Mechanical seal	X	X	X	

217.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of lube oil from engine lube oil sumps through the purifier and back to the sump.
- .42 The flow path of lube oil from the storage tanks to the discharge manifold.
- .43 The flow path of fuel oil from the storage tanks to the day tanks.

217.5 MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s).
- B. Show or describe the physical location at which the parameter is displayed for monitoring.
- C. State the setpoints.

	<u>A</u>	<u>B</u>	<u>C</u>
.51 Lube oil/fuel oil pump discharge pressure	X	X	X
.52 Lube oil/fuel oil purifier discharge pressure	X	X	
.53 Lube oil heater temperature	X	X	

217.6 SYSTEM INTERRELATIONS

- A. There are no system interrelations to be discussed.

217.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturers' Technical Manuals, OPNAVINST 5100.19 and OPNAVINST 3120.32.

218.1 Explain the function(s) of the DEWATERING AND FLOODING SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual
- c. Manufacturer's Technical Manual

.11 Draw a simple sketch of this system from memory using appropriate symbols and showing all components listed in 218.2 for use throughout this discussion.

218.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.
- E. List or describe the source(s) of control signal(s) for this component.
- F. List or describe the mode(s) of operation and/or control of this component.
- G. List the protective device(s) for this component.
- H. List the interlocks associated with this component.
- I. List the rating(s)/size of this component.
- J. Describe the "fail" position of this component on loss of power and the reason(s) it fails in this position.

		A	B	C	D	E	F	G	H	I	J
.21	Ballast tanks []	X	X	X						X	
.22	Ballast piping []	X	X	X				X		X	
.23	Ballast valves []	X	X	X	X	X	X	X	X	X	X
.24	Dewatering pumps []	X	X	X	X	X		X		X	
.25	Vacuum priming pump [c]	X	X	X	X	X		X			
.26	Vacuum priming piping []	X	X	X							

218.3 COMPONENT PARTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component part in terms of what it does for the system component and how it carries out that function.
- B. Show or describe the physical location of this component part.
- C. Describe the source(s) of power to this component part.

.31 Ballast valves:

- a. Body
- b. Bonnet
- c. Gasket
- d. Packing/packing gland
- e. Stem
- f. Seat
- g. Disc

X X
X X
X X
X X
X X
X X
X X

.32 Dewatering pumps:

- a. Drive gear
- b. Impeller
- c. Shaft
- d. Casing
- e. Oil seal
- f. Mechanical seal
- g. Lubricator

X X X
X X
X X
X X
X X
X X
X X

.33 Vacuum priming pump: [c]

- a. Drive gear
- b. Impeller
- c. Shaft
- d. Casing
- e. Oil seal
- f. Mechanical seal
- g. Lubricator
- h. Water seal tank
- i. Float valve

X X X
X X
X X
X X
X X
X X
X X
X X X
X X X

218.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- .41 The flow path of seawater from the sea chest to tanks and basin.
- .42 The flow path of seawater from the tanks and basin to the sea.
- .43 The flow path of seawater from tank to tank.

218.5 MAJOR PARAMETERS

- A. Show or describe the physical location at which the parameter is displayed for monitoring.
- B. Name the alarm and state the numerical value of the setpoint at which the alarm occurs.

- .51 Dewatering pump ammeter current flow
- .52 Lubrication oil level

A B
X X
X X

218.6 SYSTEM INTERRELATIONS

A. Describe the effect(s) on this system due to the following:

1. Loss of electrical power
2. Loss of low-pressure air
3. Loss of Ballast Control Panel System

B. Describe the effect(s) on the following due to the operation of this system:

1. Generator System

218.7 SAFETY PRECAUTIONS

A. Discuss the safety precautions applicable to each system component as specified in the Manufacturer's Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.

219 BALLAST CONTROL PANEL SYSTEM

219

219.1 Explain the function(s) of the BALLAST CONTROL PANEL SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual

.11 Refer to a standard print of this system throughout this discussion

219.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Show or describe the physical location of this component.

			A	B
.21	Main dewatering pump indicator [	]	X	X
.22	Valve position indicator (meters and lights) [	]	X	X
.23	Ballast/deballast control switches/lights [	]	X	X
.24	Main dewatering pump control devices [	]	X	X
.25	Vacuum/priming pump control switches [	]	X	X
.26	Fire pump control switches [	]	X	X
.27	Main dewatering lubricator pump alarm [	]	X	X
.28	List and trim indicator [	]	X	X

219.3 COMPONENT PARTS

- A. There are no component parts to be discussed.

219.4 PRINCIPLES OF OPERATION

- A. There are no principles of operation to be discussed.

219.5 MAJOR PARAMETERS

- A. Show or describe the physical location at which the parameter is displayed for monitoring.
- B. State the normal operating value.

		A	B
.51	Valve position	X	X

219.6 SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:

1. Loss of electrical power

219.6 SYSTEM INTERRELATIONS (CONT'D)

B. Describe the effect(s) on the following due to the operation of this system:

1. List, trim and depth of dock

219.7 SAFETY PRECAUTIONS

A. Discuss the safety precautions applicable to each system component as specified in OPNAVINST 5100.19 and OPNAVINST 3120.32.

220.1 Explain the function(s) of the DOCKING AND UNDOCKING EQUIPMENT SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual

.11 Refer to a standard print of this system throughout this discussion.

220.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.

	A	B	C	D
.21 Transit []	X	X	X	
.22 Hauling bilge and keel blocks []	X	X	X	
.23 Hauling chains and indicator []	X	X	X	
.24 Capstan []	X	X	X	X
.25 Centering chains []	X	X	X	
.26 Centering tackle []	X	X	X	
.27 Shoring []	X		X	
.28 Seismic blocking []	X	X	X	
.29 Sub blocks []	X	X	X	
.210 Inhaul and outhaul lines []	X		X	
.211 Griphoist	X	X		

220.3 COMPONENT PARTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component part in terms of what it does for the system component and how it carries out that function.
- B. Show or describe the physical location of this component part.

	A	B
.31 Transit:		
a. Barrel assembly	X	X
b. Adjustment devices	X	X
c. Pedestal	X	X
d. Leveling indicator device	X	X

220.4 PRINCIPLES OF OPERATION

- A. There are no principles of operation to be discussed.

220.5 MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s).
B. Show or describe the physical location at which the parameter is displayed for monitoring.
C. State the setpoints.
D. State the reason(s) for the setpoints in terms of the effect of operating above or below them.
E. State the normal operating value.

.51 Dock deflection

.52 Hauling block position

A	B	C	D	E
X	X	X	X	X
		X		

220.6 SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:
1. Loss of electrical power
- B. Describe the effect(s) on the following due to the operation of this system:
1. Docking a unit

220.7 SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in OPNAVINST 5100.19 and OPNAVINST 3120.32.

221.1 Explain the function(s) of the FIREMAIN SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual
- c. Manufacturer's Technical Manual

.11 Refer to a standard print of this system throughout this discussion.

221.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in the system.
- C. Describe the physical location of this component.
- D. Describe the source(s) of power to this component.
- E. List the rating(s) of this component.

	A	B	C	D	E
.21 Pumps	X	X	X	X	X
.22 Piping	X	X	X		
.23 Valves	X	X	X		
.24 Pressure gauges	X	X	X		
.25 Firemain priming system	X	X	X		
.26 Reducing valve	X	X	X		

221.3 COMPONENT PARTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component part in terms of what it does for the system component and how it carries out that function.
- B. Describe the functional location of this component part with respect to its position in the system and the reason(s) for its location in the system.
- C. Describe the physical location of this component part.

	A	B	C
.31 a. Bolt	X	X	X
b. Seal	X	X	X
c. Disc	X	X	X
d. Stem	X	X	X
e. Adjusting spring	X	X	X
f. Adjusting screw	X	X	X
g. Diaphragm	X	X	X

PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

- 1 The flow path of seawater from the seawater supply stowage tank to the components supplied.

MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s).
B. State the normal operating value.

- 1 Firemain pressure

A B
X X

SYSTEM INTERRELATIONS

- A. Describe the effect(s) on this system due to the following:

1. Loss of electrical power
2. Loss of seawater supply pumps
3. Excessive demand of seawater service components

- B. Describe the effect(s) on the following due to the operation of this system:

1. Flushing
2. Service to unit in dock

SAFETY PRECAUTIONS

- A. Discuss the safety precautions applicable to each system component as specified in the Manufacturer's Technical Manual, OPNAVINST 5100.19 and OPNAVINST 3120.32.

222 SEAWATER SUPPLY (NON-CLOG) SYSTEM

222

222.1 Explain the function(s) of the SEAWATER SUPPLY (NON-CLOG) SYSTEM as stated in:

- a. Ship's Data Book
- b. Floating Drydock Training Manual

.11 Refer to a standard print of this system throughout this discussion.

222.2 SYSTEM COMPONENTS

Discuss the designated items listed below:

- A. Explain the function(s) of this component in terms of what it does for the system.
- B. Describe the functional location of this component with respect to its position in the system and the reason(s) for its location in this position.
- C. Show or describe the physical location of this component.
- D. Describe the source(s) of power to this component.
- E. List the protective device(s) for this component.
- F. List the rating(s) of this component.

- .21 Pumps
- .22 Piping
- .23 Valves
- .24 Strainers
- .25 Controls
- .26 Storage tank

A	B	C	D	E	F
X	X	X	X	X	X
X	X	X			
X	X	X			
X	X	X			
X	X	X	X	X	X
X	X				

222.3 COMPONENT PARTS

- A. There are no component parts to be discussed.

222.4 PRINCIPLES OF OPERATION

Demonstrate an understanding of the internal operation of this system by describing/tracing:

.41 The flow path of seawater from sea suction to the components supplied.

222.5 MAJOR PARAMETERS

- A. Show or describe the physical location of the sensing point(s).
- B. Name the alarm and state the numerical value of the setpoint at which the alarm occurs.
- C. State the reason(s) for the setpoints in terms of the effect of operating above or below them.

.51 Storage tank capacity

A	B	C
X	X	X

222.6 SYSTEM INTERRELATIONS

A. Describe the effect(s) on this system due to the following:

1. Loss of electrical power
2. Excessive seawater demand

B. Describe the effect(s) on the following due to the operation of this system:

1. Air compressor
2. Flushing
3. Diesel generator
4. Firemain

222.7 SAFETY PRECAUTIONS

A. Discuss the safety precautions applicable to each system component as specified in OPNAVINST 5100.19 and OPNAVINST 3120.32.

OPERATIONS

For the operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the communications that must be established and/or utilized.
- E. Discuss the parameter indications that must be monitored.
- F. Discuss the safety precautions that must be observed.
- G. Perform the steps of this procedure.

	A	B	C	D	E	F	G
11 Line up and check ballast system	X	X	X	X	X	X	X
12 Receive and record readiness reports	X	X		X			X
13 Make readiness reports to docking office	X	X		X			X
14 Correct list and trim, and record	X	X	X	X	X	X	X
15 Fill bottom tanks	X	X		X	X	X	X
16 Fill basin	X	X	X	X	X	X	X
17 Equalize and open stern gate	X	X		X	X	X	X
18 Fill wing tanks to ordered depth	X	X		X	X		X
19 Establish list and trim for required unit	X	X	X	X	X	X	X
110 Maintain ordered list, trim and draft	X	X	X	X	X	X	X
111 Maintain list and trim of unit	X	X		X	X	X	X
112 Pump wing/pontoon tanks to land unit	X	X		X	X	X	X
113 Receive and record draft of landed unit and dock	X	X		X			X
114 Pump wing/pontoon to ordered basin draft	X	X		X	X	X	X
115 Close stern gate	X	X		X	X	X	X
116 Pump basin dry	X	X					X
117 Pump bottom tank to ordered list, trim and draft/ freeboard	X	X	X	X	X	X	X
118 Establish drainage	X	X	X	X	X	X	X
119 Receive secure report and transfer watch duty personnel	X	X	X	X	X	X	X

NORMAL OPERATIONS

For the conditions or evolutions listed below:

- A. Explain how the parameters change.
- B. Describe the meter reading(s).
- C. Describe the gauge reading(s).
- D. Describe the valve position indication(s).
- E. Describe the indicator light(s)/flag(s)/alarm(s).

	A	B	C	D	E
21 While lining up and checking ballast system	X	X	X	X	X
22 While correcting list and trim	X	X	X	X	X
23 While filling bottom tanks	X	X	X	X	X

301.2 NORMAL OPERATIONS (CONT'D)

	A	B	C	D	E
.24 While filling basin	X	X	X	X	X
.25 While equalizing and opening stern gate	X	X			
.26 While filling wing tanks to ordered depth	X	X	X	X	X
.27 While establishing list and trim for required unit	X	X	X	X	X
.28 While maintaining ordered list, trim and draft	X	X	X	X	X
.29 While matching list and trim of unit	X	X	X	X	X
.210 While pumping wing/pontoon tanks	X	X	X	X	X
.211 While pumping wing/pontoon to ordered draft	X	X	X	X	X
.212 While closing stern gate	X	X			
.213 While pumping basin dry	X	X	X	X	X
.214 While pumping bottom tank to ordered list and trim, draft and freeboard		X	X	X	X
.215 While establishing drainage		X	X	X	X
.216 While securing ballast control		X	X	X	X

301.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUALTIES

For the abnormal conditions listed below:

- A. Describe all indications and alarms that would be received by the Ballast Control Operator.
- B. List or recite the steps of the corrective action required.
- C. Indicate an understanding of this abnormal condition by describing:
 1. Probable causes.
 2. Operating limitations imposed by this abnormal condition.
 3. Other emergencies and/or casualties that may arise if this abnormal condition is not corrected.
 4. How this abnormal condition affects other watchstations.
- D. Perform when practicable or simulate the corrective action for this abnormal condition.

	A	B	C	D
.31 Inaccurate meter indicating lights	X	X	X	X
.32 Reduced electrical capability	X	X	X	X
.33 Reduced pumping capability	X	X	X	X
.34 Reduced communications	X	X	X	X
.35 Environmental condition	X	X	X	X

301.4 EMERGENCIES and/or CASUALTIES

For the emergencies and/or casualties listed below:

- A. Describe all indications and alarms that would be received by the Ballast Control Operator.
- B. List or recite the steps of procedure for the immediate action portion of this emergency and/or casualty.

EMERGENCIES and/or CASUALTIES (CONT'D)

- C. Explain the reason for each step of this emergency and/or casualty procedure in terms of:
1. Corrective action provided.
 2. Protection provided.
 3. Investigative action performed.
- D. Indicate an understanding of this emergency and/or casualty by describing:
1. Probable causes.
 2. Operating limitations imposed by this emergency and/or casualty.
 3. Other emergencies and/or casualties that may arise if this emergency and/or casualty is not corrected.
 4. How this emergency and/or casualty affects other watchstations.
- E. Outline the followup action required.
- F. Perform when practicable or simulate the corrective action for this emergency and/or casualty.

	A	B	C	D	E	F
Tracking or runaway crane	X					X
Leaking or inoperative valves	X	X	X	X	X	X
Stern gate hydraulic failure	X	X	X	X	X	X
Loss of dock pumps	X	X	X	X	X	X
Loss of electrical plant	X	X	X	X	X	X
Communications breakdown	X	X	X	X	X	X
Loss of pump control indication	X	X	X	X	X	X

INFREQUENT and/or ABNORMAL OPERATIONS

For the infrequent and/or abnormal operations listed below:

- Describe the steps of this procedure.
- Explain the reasons for each step of this procedure.
- Discuss the control/coordination required when using this procedure.
- Discuss the communications that must be established and/or utilized.
- Discuss the parameter indications that must be monitored.
- Discuss the safety precautions that must be observed.
- Describe the limitations imposed by this infrequent and/or abnormal operation.
- Describe the conditions that require this infrequent and/or abnormal operation.
- Define how the parameters monitored by this watchstation are changed by this infrequent and/or abnormal operation.
- Perform when practicable or simulate this infrequent and/or abnormal operation.

	A	B	C	D	E	F	G	H	I	J
1 Multiunit docking	X	X	X	X	X	X	X	X	X	X
2 Heavy weather ballasting	X	X	X	X	X	X	X	X	X	X

302 WATCHSTATION - PHONE TALKER/RECORDER

30

302.1 OPERATIONS

For the operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the communications that must be established and/or utilized.
- E. Perform the steps of this procedure.

		A	B	C	D	E
.11	Set up a sound-powered phone set for operation	X	X			X
.12	Establish and test communications	X	X	X	X	X
.13	Transmit messages using standard phraseology	X	X		X	X
.14	Receive and record messages	X	X			X
.15	Secure and stow a sound-powered phone set	X	X			X
.16	Set up docking communications	X	X	X	X	X

302.2 NORMAL OPERATIONS

- A. There are no normal operations to be discussed.

302.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUALT

For the abnormal conditions listed below:

- A. Describe all indications and alarms that would be received by the Phone Talker/Recorder.
- B. List or recite the steps of the corrective action required.
- C. Indicate an understanding of this abnormal condition by describing:
 1. Probable causes.
 2. Operating limitations imposed by this abnormal condition.
 3. Other emergencies and/or casualties that may arise if this abnormal condition is not corrected.
 4. How this abnormal condition affects other watchstations.
- D. Perform when practicable or simulate the corrective action for this abnormal condition.

		A	B	C	D
.31	Malfunction in sound-powered phone/docking MC circuits	X	X	X	X

302.4 EMERGENCIES and/or CASUALTIES

For the emergencies and/or casualties listed below:

- A. Describe all indications and alarms that would be received by the Phone Talker/Recorder.

.4 EMERGENCIES and/or CASUALTIES (CONT'D)

- B. List or recite the steps of procedure for the immediate action portion of this emergency and/or casualty.
- C. Explain the reason for each step of this emergency and/or casualty procedure in terms of:
 - 1. Corrective action provided.
 - 2. Protection provided.
 - 3. Investigative action performed.
- D. Indicate an understanding of this emergency and/or casualty by describing:
 - 1. Probable causes.
 - 2. Operating limitations imposed by this emergency and/or casualty.
 - 3. Other emergencies and/or casualties that may arise if this emergency and/or casualty is not corrected.
 - 4. How this emergency and/or casualty affects other watchstations.
- E. Outline the followup action required.
- F. Perform when practicable or simulate the corrective action for this emergency and/or casualty.

.41 Loss of communications

A	B	C	D	E	F
X	X	X	X	X	X

.5 INFREQUENT and/or ABNORMAL OPERATIONS

- A. There are no infrequent or abnormal operations to be discussed.

303.1 OPERATIONS

For the operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Perform the steps of this procedure.

- .11 Conduct assigned rounds
- .12 Make readiness report
- .13 Make additional reports as required

A	B	C
X	X	X
X	X	X
X	X	X

303.2 NORMAL OPERATIONS

- A. There are no normal operations to be discussed.

303.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUALTIES

For the abnormal conditions listed below:

- A. Describe all indications and alarms that would be received by the Roving Security Patrol.
- B. List or recite the steps of the corrective action required.
- C. Indicate an understanding of this abnormal condition by describing:
 - 1. Probable causes.
 - 2. Operating limitations imposed by this abnormal condition.
 - 3. Other emergencies and/or casualties that may arise if this abnormal condition is not corrected.
 - 4. How this abnormal condition affects other watchstations.
- D. Perform when practicable or simulate the corrective action for this abnormal condition.

- .31 Flooding

A	B	C	D
X	X	X	X

303.4 EMERGENCIES and/or CASUALTIES

For the emergencies and/or casualties listed below:

- A. Describe all indications and alarms that would be received by the Roving Security Patrol.
- B. List or recite the steps of procedure for the immediate action portion of this emergency and/or casualty.
- C. Explain the reason for each step of this emergency and/or casualty procedure in terms of:
 - 1. Corrective action provided.
 - 2. Protection provided.
 - 3. Investigative action performed.

303.4 EMERGENCIES and/or CASUALTIES (CONT'D)

D. Indicate an understanding of this emergency and/or casualty by describing:

1. Probable causes.
2. Operating limitations imposed by this emergency and/or casualty.
3. Other emergencies and/or casualties that may arise if this emergency and/or casualty is not corrected.
4. How this emergency and/or casualty affects other watchstations.

E. Outline the followup action required.

F. Perform when practicable or simulate the corrective action for this emergency and/or casualty.

- .41 Fire
.42 Flooding
.43 Structural damage

A	B	C	D	E	F
X		X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X

303.5 INFREQUENT and/or ABNORMAL OPERATIONS

A. There are no infrequent or abnormal operations to be discussed.

304.1 OPERATIONS

For the operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the communications that must be established and/or utilized.
- E. Discuss the parameter indications that must be monitored.
- F. Discuss the safety precautions that must be observed.
- G. Perform the steps of this procedure.

		A	B	C	D	E	F	G
.11	Conduct inspection of required spaces	X	X	X	X	X	X	X
.12	Make readiness report	X	X		X			X
.13	Conduct appointed rounds and make reports	X	X					X
.14	Maintain required logs	X	X		X			X

304.2 NORMAL OPERATIONS

For the conditions or evolutions listed below:

- A. Explain how the parameters change.
- B. Describe the meter reading(s).
- C. Describe the gauge reading(s).
- D. Describe the breaker position indication(s).
- E. Describe the disconnect position indication(s).
- F. Describe the bus tie position indication(s).
- G. Describe the valve position indication(s).
- H. Describe the indicator light(s)/flag(s)/alarm(s)).

		A	B	C	D	E	F	G	H
.21	While conducting inspection of required spaces	X	X	X	X	X	X	X	X
.22	While conducting appointed rounds	X	X	X	X	X	X	X	X

304.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUALTIES

- A. There are no abnormal conditions that could lead to emergencies or casualties to be discussed.

304.4 EMERGENCIES and/or CASUALTIES

- A. There are no emergencies or casualties to be discussed.

304.5 INFREQUENT and/or ABNORMAL OPERATIONS

- A. There are no infrequent or abnormal operations to be discussed.

305.1 OPERATIONS

For the operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the communications that must be established and/or utilized.
- E. Discuss the parameter indications that must be monitored.
- F. Discuss the safety precautions that must be observed.
- G. Perform the steps of this procedure.

	A	B	C	D	E	F	G
.11 Preoperational lineups and checks	X	X	X	X	X	X	X
.12 Readiness reports to ballast control	X	X	X	X	X	X	X
.13 Manual/electrical operation of ballast control valves		X	X	X	X	X	X
.14 Line up sanitary system as directed		X	X	X	X		X
.15 Secure pumphoom station		X	X	X	X	X	X

305.2 NORMAL OPERATIONS

For the conditions or evolutions listed below:

- A. Explain how the parameters change.
- B. Describe the gauge reading(s).
- C. Describe the valve position indication(s).
- D. Describe the indicator light(s)/flag(s)/alarm(s).

	A	B	C	D
.21 During preoperational lineups and checks	X	X	X	X
.22 During manual/electrical operation of ballast control valves		X	X	X
.23 While securing pumphoom station		X	X	X

305.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUALTIES

- A. There are no abnormal conditions that could lead to emergencies or casualties to be discussed.

305.4 EMERGENCIES and/or CASUALTIES

For the emergencies and/or casualties listed below:

- A. Describe all indications and alarms that would be received by the Pumphoom Operator.
- B. List or recite the steps of procedure for the immediate action portion of this emergency and/or casualty.

305.4 EMERGENCIES and/or CASUALTIES (CONT'D)

- C. Explain the reason for each step of this emergency and/or casualty procedure in terms of:
 - 1. Corrective action provided.
 - 2. Protection provided.
 - 3. Investigative action performed.
- D. Indicate an understanding of this emergency and/or casualty by describing:
 - 1. Probable causes.
 - 2. Operating limitations imposed by this emergency and/or casualty.
 - 3. Other emergencies and/or casualties that may arise if this emergency and/or casualty is not corrected.
 - 4. How this emergency and/or casualty affects other watchstations.
- E. Outline the followup action required.
- F. Perform when practicable or simulate the corrective action for this emergency and/or casualty.

	A	B	C	D	E	F
.41 Inoperative valve	X	X	X	X	X	X
.42 Loss of electrical power	X	X	X	X	X	X
.43 Flooding	X	X	X	X	X	X
.44 Loss of communications	X	X	X	X	X	X

305.5 INFREQUENT and/or ABNORMAL OPERATIONS

For the infrequent and/or abnormal operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the communications that must be established and/or utilized.
- E. Discuss the parameter indications that must be monitored.
- F. Discuss the safety precautions that must be observed.
- G. Describe the limitations imposed by this infrequent and/or abnormal operation.
- H. Describe the conditions that require this infrequent and/or abnormal operation.
- I. Define how the parameters monitored by this watchstation are changed by this infrequent and/or abnormal operation.
- J. Perform when practicable or simulate this infrequent and/or abnormal operation.

[illegible]

306.1 OPERATIONS

For the operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the communications that must be established and/or utilized.
- E. Discuss the parameter indications that must be monitored.
- F. Discuss the safety precautions that must be observed.
- G. Perform the steps of this procedure.

	A	B	C	D	E	F	G
.11 Check system lineup (hydraulic and electrical)	X	X	X	X	X	X	X
.12 Make readiness report	X	X		X			X
.13 Activate hydraulic system	X	X	X	X	X	X	X
.14 Operate stern gate as directed	X	X	X	X	X	X	X
.15 Secure system (hydraulic and electrical)	X	X	X	X	X	X	X

306.2 NORMAL OPERATIONS

For the conditions or evolutions listed below:

- A. Explain how the parameters change.
- B. Describe the gauge reading(s).
- C. Describe the indicator light(s)/flag(s)/alarm(s).

	A	B	C
.21 While checking system lineup (hydraulic and electrical)	X	X	X
.22 When activating hydraulic system	X	X	X
.23 While operating stern gate	X	X	X
.24 While securing system (hydraulic and electrical)	X	X	X

306.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUALTIES

For the abnormal conditions listed below:

- A. Describe all indications and alarms that would be received by the Stern Gate Operator.
- B. List or recite the steps of the corrective action required.
- C. Indicate an understanding of this abnormal condition by describing:
 1. Probable causes.
 2. Operating limitations imposed by this abnormal condition.
 3. Other emergencies and/or casualties that may arise if this abnormal condition is not corrected.
 4. How this abnormal condition affects other watchstations.

306.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUALTIES
(CONT'D)

D. Perform when practicable or simulate the corrective action for this abnormal condition.

.31 Hydraulic leaks

.32 Hull penetration leaks

A	B	C	D
X	X	X	X
X	X	X	X

306.4 EMERGENCIES and/or CASUALTIES

For the emergencies and/or casualties listed below:

A. Describe all indications and alarms that would be received by the Stern Gate Operator.

B. List or recite the steps of procedure for the immediate action portion of this emergency and/or casualty.

C. Explain the reason for each step of this emergency and/or casualty procedure in terms of:

1. Corrective action provided.

2. Protection provided.

3. Investigative action performed.

D. Indicate an understanding of this emergency and/or casualty by describing:

1. Probable causes.

2. Operating limitations imposed by this emergency and/or casualty.

3. Other emergencies and/or casualties that may arise if this emergency and/or casualty is not corrected.

4. How this emergency and/or casualty affects other watchstations.

E. Outline the followup action required.

F. Perform when practicable or simulate the corrective action for this emergency and/or casualty.

.41 Loss of electrical power

.42 Loss of hydraulic pressure

.43 Ram packing leak (hull penetration)

A	B	C	D	E	F
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X

306.5 INFREQUENT and/or ABNORMAL OPERATIONS

For the infrequent and/or abnormal operations listed below:

A. Describe the steps of this procedure.

B. Explain the reasons for each step of this procedure.

C. Discuss the control/coordination required when using this procedure.

D. Discuss the communications that must be established and/or utilized.

- E. Discuss the safety precautions.
- F. Describe the limitations imposed by this infrequent and/or abnormal operation.
- G. Describe the conditions that require this infrequent and/or abnormal operation.
- H. Define how the parameters monitored by this watchstation are changed by this infrequent and/or abnormal operation.
- I. Perform when practicable or simulate this infrequent and/or abnormal operation.

A	B	C	D	E	F	G	H	I
X	X	X	X	X	X	X	X	X

.51 Manually operate stern gate

307.1 OPERATIONS

For the operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the communications that must be established and/or utilized.
- E. Discuss the parameter indications that must be monitored.
- F. Discuss the safety precautions that must be observed.
- G. Perform the steps of this procedure.

	A	B	C	D	E	F	G
.11 Assist Docking Officer as directed							X
.12 Check docking plans	X	X			X	X	X
.13 Lay out bottom curves of units to be docked	X	X			X	X	X
.14 Supervise cutting of blocks	X	X			X	X	X
.15 Supervise installation of blocks	X	X	X		X	X	X
.16 Supervise inspection of basin prior to ballasting	X	X				X	X
.17 Supervise setting of center chain and tackle	X	X	X	X	X	X	X
.18 Develop pumping plan	X	X	X	X	X	X	X
.19 Ensure the list and trim of units are within limits prior to docking	X	X			X	X	X
.110 Supervise Ballast Control Operator	X	X	X	X	X	X	X
.111 Assist in hauling in and centering the units using transit/centering chains	X	X	X	X	X	X	X
.112 Supervise positioning of all hauling blocks	X	X	X	X	X	X	X
.113 Supervise installation of shoring as required	X	X	X			X	X
.114 Check positioning of unit	X	X	X				X
.115 Supervise preparation of the basin and unit prior to undocking	X	X	X				X
.116 Supervise the stowing of all hauling blocks	X	X	X	X	X	X	X
.117 Assist in hauling out unit	X	X	X	X	X	X	X

307.2 NORMAL OPERATIONS

For the conditions or evolutions listed below:

- A. Explain how the parameters change.
- B. Describe the meter reading(s).
- C. Describe the gauge reading(s).
- D. Describe the valve position indication(s).
- E. Describe the indicator light(s)/flag(s)/alarm(s).
- F. Describe the marking indications.

	A	B	C	D	E	F
.21 While supervising installation of blocks	X		X			X
.22 While supervising setting of centering chain	X					X
.23 While ensuring list and trim of units are within limits prior to docking	X					X

	using transit/centering chains	X	X
.25	While supervising hauling of all hauling blocks		X
.26	While supervising ballast control with unit on blocks	X X X X X	
.27	While supervising stowing of all hauling blocks		X

307.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUALTIES

For the abnormal conditions listed below:

- A. Describe all indications and alarms that would be received by the Dockmaster.
- B. List or recite the steps of the corrective action required.
- C. Indicate an understanding of this abnormal condition by describing:
 1. Probable causes.
 2. Operating limitations imposed by this abnormal condition.
 3. Other emergencies and/or casualties that may arise if this abnormal condition is not corrected.
 4. How this abnormal condition affects other watchstations.
- D. Perform when practicable or simulate the corrective action for this abnormal condition.

		A	B	C	D
.31	Environmental condition	X	X	X	X
.32	Damage to blocking/shoring	X	X	X	X

307.4 EMERGENCIES and/or CASUALTIES

For the emergencies and/or casualties listed below:

- A. Describe all indications and alarms that would be received by the Dockmaster.
- B. List or recite the steps of procedure for the immediate action portion of this emergency and/or casualty.
- C. Explain the reason for each step of this emergency and/or casualty procedure in terms of:
 1. Corrective action provided.
 2. Protection provided.
 3. Investigative action performed.
- D. Indicate an understanding of this emergency and/or casualty by describing:
 1. Probable causes.
 2. Operating limitations imposed by this emergency and/or casualty.

307.4 EMERGENCIES and/or CASUALTIES (CONT'D)

3. Other emergencies and/or casualties that may arise if this emergency and/or casualty is not corrected.
4. How this emergency and/or casualty affects other watchstat

- E. Outline the followup action required.
- F. Perform when practicable or simulate the corrective action for this emergency and/or casualty.

		A	B	C	D	E	F
.41	Accidental flooding of ballast/basin	X	X	X	X	X	X
.42	Collision	X	X	X	X	X	X
.43	Radiological consideration	X	X	X	X	X	X

307.5 INFREQUENT and/or ABNORMAL OPERATIONS

For the infrequent and/or abnormal operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the communications that must be established and/or utilized.
- D. Discuss the safety precautions that must be observed.
- E. Describe the limitations imposed by this infrequent and/or abnormal operation.
- F. Perform when practicable or simulate this infrequent and/or abnormal operation.

		A	B	C	D	E	F
.51	Modify blocking	X	X	X	X	X	X
.52	Compensate weight changes due to unit docked	X	X	X	X	X	X

08.1 OPERATIONS

For the operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the communications that must be established and/or utilized.
- E. Discuss the parameter indications that must be monitored.
- F. Discuss the safety precautions that must be observed.
- G. Perform the steps of this procedure.

	A	B	C	D	E	F	G
.11 Determine time and date for docking	X	X					X
.12 Schedule docking conference	X	X	X	X			X
.13 Review work package and determine docking position	X	X	X	X	X	X	X
.14 Develop docking and pumping plan	X	X			X		X
.15 Hold docking conference	X	X	X	X	X	X	X
.16 Verify build	X	X			X	X	X
.17 Receive required readiness reports	X	X	X	X			X
.18 Relieve CDO for docking	X	X					X
.19 Visually inspect dock basin	X	X	X	X	X	X	X
.110 Receive permission and commence ballasting	X	X	X	X	X	X	X
.111 Receive and position the unit	X	X	X	X	X	X	X
.112 Match list, trim and deballast	X	X	X	X	X	X	X
.113 Verify unit properly docked and services properly connected	X	X	X	X	X	X	X
.114 Secure docking station	X	X					X
.115 Determine scope of underwater hull work required	X	X	X		X	X	X
.116 Schedule undocking conference	X	X	X	X			X
.117 Verify dock and unit ready for undocking	X	X	X	X	X	X	X
.118 Relieve CDO for undocking	X	X					X
.119 Undock unit	X	X	X	X	X	X	X
.120 Deballast	X	X	X	X	X	X	X
.121 Prepare the docking report	X	X	X				X

08.2 NORMAL OPERATIONS

- A. There are no normal operations to be discussed.

08.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUALTIES

For the abnormal conditions listed below:

- A. Describe all indications and alarms that would be received by the Docking Officer.
- B. List or recite the steps of the corrective action required.

308.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUALTIES (CONT'D)

C. Indicate an understanding of this abnormal condition by describing:

1. Probable causes.
2. Operating limitations imposed by this abnormal condition.
3. Other emergencies and/or casualties that may arise if this abnormal condition is not corrected.
4. How this abnormal condition affects other watchstations.

D. Perform when practicable or simulate the corrective action for this abnormal condition.

.31 Excessive list and trim on dock

A	B	C	D
X	X	X	X

308.4 EMERGENCIES and/or CASUALTIES

For the emergencies and/or casualties listed below:

A. Describe all indications and alarms that would be received by the Docking Officer.

B. List or recite the steps of procedure for the immediate action portion of this emergency and/or casualty.

C. Explain the reason for each step of this emergency and/or casualty procedure in terms of:

1. Corrective action provided.
2. Protection provided.
3. Investigative action performed.

D. Indicate an understanding of this emergency and/or casualty by describing:

1. Probable causes.
2. Operating limitations imposed by this emergency and/or casualty.
3. Other emergencies and/or casualties that may arise if this emergency and/or casualty is not corrected.
4. How this emergency and/or casualty affects other watchstations.

E. Outline the followup action required.

F. Perform when practicable or simulate the corrective action for this emergency and/or casualty.

.41 Loss of control of landing unit

A	B	C	D	E	F
X	X	X	X	X	X

308.5 INFREQUENT and/or ABNORMAL OPERATIONS

For the infrequent and/or abnormal operations listed below:

A. Describe the steps of this procedure.

308.5 INFREQUENT and/or ABNORMAL OPERATIONS (CONT'D)

- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the communications that must be established and/or utilized.
- E. Discuss the parameter indications that must be monitored.
- F. Discuss the safety precautions that must be observed.
- G. Describe the limitations imposed by this infrequent and/or abnormal operation.
- H. Describe the conditions that require this infrequent and/or abnormal operation.
- I. Define how the parameters monitored by this watchstation are changed by this infrequent and/or abnormal operation.
- J. Perform when practicable or simulate this infrequent and/or abnormal operation.

	A	B	C	D	E	F	G	H	I	J
.51 Dock damaged unit	X	X	X	X	X	X	X	X	X	X
.52 Dock special class units	X	X	X	X	X	X	X	X	X	X

309 WATCHSTATION - ENGINEROOM OILER

3

309.1 OPERATIONS

For the operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the parameter indications that must be monitored.
- E. Discuss the safety precautions that must be observed.
- F. Perform the steps of this procedure.

	A	B	C	D	E
.11 Conduct preliminary engineroom checks	X	X	X	X	X
.12 Line up systems and assist in starting auxiliary pumps					
.13 Assist in starting engine	X	X	X	X	X
.14 Take and record required readings	X	X	X	X	X
.15 Operate fuel oil and lube oil purifiers as required	X	X	X	X	X
.16 Assist in lineup and operation of fire pumps	X	X	X	X	X
.17 Assist in operating auxiliary boiler	X	X	X	X	X
.18 Assist in operating diesel air start compressor	X	X	X	X	X
.19 Report all abnormal conditions	X	X	X	X	X
.110 Secure all equipment unnecessary for docking	X	X		X	
.111 Secure from docking station	X	X			

309.2 NORMAL OPERATIONS

For the conditions or evolutions listed below:

- A. Explain how the parameters change.
- B. Describe the meter reading(s).
- C. Describe the gauge reading(s).
- D. Describe the valve position indication(s).
- E. Describe the indicator light(s)/flag(s)/alarm(s).

	A	B	C	D	E
.21 While conducting preliminary engineroom checks		X	X	X	X
.22 While operating diesel engine	X	X	X	X	X
.23 While operating auxiliary pumps	X	X	X		
.24 While operating fuel oil and lube oil purifiers	X	X	X		
.25 While operating the boiler	X	X	X	X	
.26 While operating diesel air start compressor	X	X	X		
.27 While securing all unnecessary docking equipment	X		X	X	

309.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUAL

For the abnormal conditions listed below:

- A. Describe all indications and alarms that would be received by the Engineroom Oiler.

309.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUALTIES
(CONT'D)

- B. List or recite the steps of the corrective action required.
- C. Indicate an understanding of this abnormal condition by describing:
 - 1. Probable causes.
 - 2. Operating limitations imposed by this abnormal condition.
 - 3. Other emergencies and/or casualties that may arise if this abnormal condition is not corrected.
 - 4. How this abnormal condition affects other watchstations.
- D. Perform when practicable or simulate the corrective action for this abnormal condition.

	A	B	C	D
.31 Low firemain pressure	X	X	X	X
.32 Low cooling water pressure	X	X	X	X
.33 Clogged fuel filters	X	X	X	X
.34 Partial loss of diesel engine fuel pressure	X	X	X	X
.35 Diesel engine high jacket water temperature	X	X	X	X
.36 Diesel engine high lube oil temperature	X	X	X	X
.37 Diesel engine high exhaust/cylinder temperature	X	X	X	X
.38 Diesel engine low lube oil pressure	X	X	X	X
.39 Low auxiliary cooling water pressure	X	X	X	X
.310 Loss of governor control	X	X	X	X
.311 Loss of purifier bowl seal	X	X	X	X
.312 Loss of priming seal	X	X	X	X
.313 Loss of drive belt (lube oil/fuel oil purifier)	X	X	X	X
.314 Low feedwater	X	X	X	X
.315 High boiler pressure	X	X	X	X
.316 High salinity	X	X	X	X

309.4 EMERGENCIES and/or CASUALTIES

For the emergencies and/or casualties listed below:

- A. Describe all indications and alarms that would be received by the Engineer/Oiler.
- B. List or recite the steps of procedure for the immediate action portion of this emergency and/or casualty.
- C. Explain the reason for each step of this emergency and/or casualty procedure in terms of:
 - 1. Corrective action provided.
 - 2. Protection provided.
 - 3. Investigative action performed.
- D. Indicate an understanding of this emergency and/or casualty by describing:
 - 1. Probable causes.
 - 2. Operating limitations imposed by this emergency and/or casualty.

309.4 EMERGENCIES and/or CASUALTIES (CONT'D)

3. Other emergencies and/or casualties that may arise if this emergency and/or casualty is not corrected.
4. How this emergency and/or casualty affects other watchstations.

- E. Outline the followup action required.
- F. Perform when practicable or simulate the corrective action for this emergency and/or casualty.

	A	B	C	D	E	F
.41 Loss of lube oil	X	X	X	X	X	X
.42 Overspeeding engine	X	X	X	X	X	X
.43 Loss of engine	X	X	X	X	X	X

309.5 INFREQUENT and/or ABNORMAL OPERATIONS

For the infrequent and/or abnormal operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the parameter indications that must be monitored.
- E. Discuss the safety precautions that must be observed.
- F. Perform when practicable or simulate this infrequent and/or abnormal operation.

	A	B	C	D	E	F
.51 Operate with low injection temperature	X	X	X	X	X	X
.52 Supply auxiliary steam to dock basin	X	X	X	X	X	X

10.1 OPERATIONS

For the operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the communications that must be established and/or utilized.
- D. Discuss the parameter indications that must be monitored.
- E. Discuss the safety precautions that must be observed.
- F. Perform the steps of this procedure.

	A	B	C	D	E	F
.11 Set up ship's service generator switchboard	X	X	X	X	X	X
.12 Synchronize ship's service generator for parallel operation	X	X	X	X	X	X
.13 Adjust ship's service generator voltage using manual voltage-adjusting rheostat	X	X		X	X	X
.14 Adjust ship's service generator voltage using automatic voltage-adjusting rheostat	X	X		X	X	X
.15 Balance current using the automatic voltage-adjusting rheostat while in parallel operation	X	X	X	X	X	X
.16 Balance kilowatts using governor motor control switch while in parallel operation	X	X				X
.17 Interpret ground indicating lights with ground detector switch in test position	X	X		X		X
.18 Shift from ship's power to shore power	X	X				X
.19 Shift from shore power to ship's power	X	X	X	X	X	X
.110 Parallel ship's service generators	X	X	X	X	X	X

10.2 NORMAL OPERATIONS

For the conditions or evolutions listed below:

- A. Define the parameter(s) monitored.
- B. Explain how the parameters change.
- C. Describe the meter reading(s).

	A	B	C
.21 During increase in electrical load	X	X	X
.22 During decrease in electrical load	X	X	X
.23 During fluctuating electrical load	X	X	X

10.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUALTIES

For the abnormal conditions listed below:

- A. Describe all indications and alarms that would be received by the Switchboard Operator.
- B. List or recite the steps of the corrective action required.
- C. Indicate an understanding of this abnormal condition by describing:
 1. Probable causes.

2. Operating limitations imposed by this abnormal condition.
3. Other emergencies and/or casualties that may arise if this abnormal condition is not corrected.
4. How this abnormal condition affects other watchstations.

D. Perform when practicable or simulate the corrective action for this abnormal condition.

	A	B	C	D
.31 High generator temperature	X	X	X	X
.32 Grounded circuit indicated on switchboard	X	X	X	X
.33 Unusual noise in generator	X	X	X	X
.34 Sudden increase in amperage and kilowattmeter readings	X	X	X	X
.35 Large fluctuations in frequency	X	X	X	X

310.4 EMERGENCIES and/or CASUALTIES

For the emergencies and/or casualties listed below:

- A. Describe all indications and alarms that would be received by the Switchboard Operator.
- B. List or recite the steps of procedure for the immediate action portion of this emergency and/or casualty.
- C. Explain the reason for each step of this emergency and/or casualty procedure in terms of:
 1. Corrective action provided.
 2. Protection provided.
 3. Investigative action performed.
- D. Indicate an understanding of this emergency and/or casualty by describing:
 1. Probable causes.
 2. Operating limitations imposed by this emergency and/or casualty.
 3. Other emergencies and/or casualties that may arise if this emergency and/or casualty is not corrected.
 4. How this emergency and/or casualty affects other watchstations.
- E. Outline the followup action required.
- F. Perform when practicable or simulate the corrective action for this emergency and/or casualty.

	A	B	C	D	E	F
.41 Fire in switchboard	X	X	X	X	X	X
.42 Fire in generator	X	X	X	X	X	X
.43 Generator overspeed	X	X	X	X		X
.44 Overload	X	X	X	X		X
.45 Loss of lube oil pressure	X	X	X	X		X

310.4 EMERGENCIES and/or CASUALTIES (CONT'D)

- .46 Loss of fuel oil pressure
- .47 Loss of cooling water

A	B	C	D	E	F
X	X	X	X		X
X	X	X	X	X	X

310.5 INFREQUENT and/or ABNORMAL OPERATIONS

For the infrequent and/or abnormal operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the parameter indications that must be monitored.
- E. Discuss the safety precautions that must be observed.
- F. Describe the limitations imposed by this infrequent and/or abnormal operation.
- G. Define how the parameters monitored by this watchstation are changed by this infrequent and/or abnormal operation.
- H. Perform when practicable or simulate this infrequent and/or abnormal operation.

- .51 Operate bus tie disconnects

A	B	C	D	E	F	G	H
Y	Y	Y	Y	Y	Y	Y	Y

311 WATCHSTATION - TOP WATCH/THROTTLEMAN

3

311.1 OPERATIONS

For the operations listed below:

- A. Describe the steps of this procedure.
- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the communications that must be established and/or utilized.
- E. Discuss the parameter indications that must be monitored.
- F. Discuss the safety precautions that must be observed.
- G. Perform the steps of this procedure.

	A	B	C	D	E
.11 Verify engine lineup	X	X	X	X	X
.12 Start auxiliary pumps	X	X	X	X	X
.13 Line up and operate fire pumps	X	X	X	X	X
.14 Operate auxiliary boiler	X	X	X	X	X
.15 Operate the diesel air start compressor	X	X	X	X	X
.16 Supervise operation of fuel oil/lube oil purifiers	X	X	X	X	X
.17 Supervise watchstanders	X	X			
.18 Review logs maintained by watchstanders	X	X			
.19 Supervise training	X	X	X	X	

311.2 NORMAL OPERATIONS

- A. There are no normal operations to be discussed.

311.3 ABNORMAL CONDITIONS that could lead to EMERGENCIES and/or CASUAL

For the abnormal conditions listed below:

- A. Describe all indications and alarms that would be received by the Top Watch/Throttleman.
- B. List or recite the steps of the corrective action required.
- C. Indicate an understanding of this abnormal condition by describing:
 1. Probable causes.
 2. Operating limitations imposed by this abnormal condition
 3. Other emergencies and/or casualties that may arise if the abnormal condition is not corrected.
 4. How this abnormal condition affects other watchstations.
- D. Perform when practicable or simulate the corrective action for this abnormal condition.

	A	B	C	D
.31 Low firemain pressure	X	X	X	X
.32 Low cooling water pressure	X	X	X	X
.33 Clogged fuel filters	X	X	X	X
.34 Partial loss of diesel engine fuel pressure	X	X	X	X

311.5 INFREQUENT and/or ABNORMAL OPERATIONS (CONT'D)

- B. Explain the reasons for each step of this procedure.
- C. Discuss the control/coordination required when using this procedure.
- D. Discuss the parameter indications that must be monitored.
- E. Discuss the safety precautions that must be observed.
- F. Perform when practicable or simulate this infrequent and abnormal operation.

- .51 Operate with low injection temperature
- .52 Supply auxiliary steam to dock basin

A	B
X	X
X	X

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. Auxiliary Boiler Feedwater Pump	
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. Diesel	
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. General Announcing System Amplifier (AN/WIC)	
. Low-Pressure Air Compressor	
. Lube Oil/Fuel Oil Pump	
. Lube Oil/Fuel Oil Purifier	
. Portable Announcing (10MC)	
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